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CONTROL SERIES. BULLETIN No. 1. OCTOBER, 1914.

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION

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INSPECTION OF COMMERCIAL FEED STUFFS

BY

P. H. SMITH and C. L. BEALS.

This bulletin contains the analyses of commercial feed stuffs found in the Massachusetts markets during the year (September, 1913—September, 1914), together with such comments as are called for by the results of the inspection. In addition will be found a tabulated list of the wholesale cost of feed stuffs for the year.

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DEPARTMENT OF PLANT AND ANIMAL CHEMISTRY.

J. B. LINDSEY, *Chemist.*

INSPECTION OF COMMERCIAL FEEDING STUFFS.

By P. H. SMITH, *Chemist in Charge.*

Assisted by

C. L. BEALS.

INTRODUCTION.

During the past year, 924 samples of feeding stuffs have been collected and examined by the Massachusetts experiment station. Although less samples were collected than for the preceding year, yet they represented very satisfactorily the character of feeding stuffs on sale in this state. In accordance with the feeding stuffs law, 1002 brands of feeding stuffs were registered; some of those registered, however, were not offered for sale or, if offered, were sold to such a limited extent that they were not found by the inspector.

The spirit of co-operation between dealer and those having in charge the enforcement of the feeding stuffs law has been, on the whole, very satisfactory. Only three cases have been brought for prosecution; two of them have been settled and one is still pending. The officials having the law in charge are always reluctant to bring cases into court except as a last resort or where the interests of the consumer are at stake, preferring to depend upon publicity and persuasion, if possible.

About a year ago the Federal Government through the Bureau of Chemistry ruled that wheat by-products containing screenings purchased with the wheat should be labeled as "containing screenings not exceeding mill run". This ruling has been adopted by the Massachusetts officials. In practical feeding, preference should be given to wheat feeds that do not contain screenings when sold at the same price as the inferior product.

The importation of feeding stuffs has been increasing for several years. Thus far the amount imported has not affected the local market, the imported feeding stuffs having sold at ruling prices or, in some cases, for prices in excess of those charged for domestic products. Recently cargoes of corn and wheat feeds have been received from the Argentine Republic, a cargo of dried beet pulp has been brought to Boston from Spain, Canadian wheat feeds have been coming in for some time, and Molassine meal and the Bibby feeds, both English products, are quite extensively sold in Massachusetts. The writer has been given to understand that under the present local west-bound freight rates the importation of feeding stuffs can be of little benefit to Massachusetts as a whole, even though they could be delivered in Boston at a price which would make them desirable for feeders in that vicinity.

Particular attention is called to the fact that certain unscrupulous manufacturers and their agents have been stating that officials of the experiment station endorse their products. In some instances quotations purporting to have been taken from the experiment station publications have been used in such a way as to prevert their true meaning. Whenever any doubt exists in the mind of the purchaser as to the reliability of such statements or quotations, he should correspond with the experiment station and ascertain the true facts.

Following is a tabulation of the analyses of feeding stuffs found by the inspector in the Massachusetts markets. In case of mixed or compounded feeds a statement of certified ingredients is also attached. While a complete fodder analysis would be of more value to the feeder, the resources at our command will not allow us to undertake the extra work.

Commercial feeding stuffs are, or should be, purchased principally either for their protein content or for their high digestibility. Inasmuch as the protein content is stated and as a high fiber content indicates low digestibility, the figures given serve as an indication of the feeding value of the various feeding stuffs reported.

In general, unmixed by-products such as cottonseed meal, linseed meal, gluten feed, distillers' grains, corn meal, hominy feed, beet pulp, and the like, will prove more economical than many of the prepared mixtures which frequently contain material of inferior feeding value. There are some exceptions to this general statement and the purchaser need not be misled if he will read the guaranteed list of ingredients which is, or should be, attached to every package of prepared feeding stuff.

CHEMICAL ANALYSIS OF FEEDSTUFFS.

1913-1914 [*Fall and Winter.*]

I Protein Feeds

COTTONSEED MEAL.

Definitions. *COTTONSEED MEAL is the ground residue obtained in the extraction of oil from the cottonseed kernel.
CHOICE cottonseed meal contains at least 41 per cent protein.
PRIME cottonseed meal contains from 38.5 to 41 per cent protein.
GOOD cottonseed meal contains from 36 to 38.5 per cent protein.
COTTONSEED FEED is a mixture of cottonseed meal and cottonseed hulls containing less than 36 per cent protein.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
Choice		%	%	%	%	%	%
American Cotton Oil Co., New York.							
Red Tag.......W. J. Meek	Fall River	41.74	38.55	7.66	7.00	9.20	11.50
Red Tag.......C. T. Wyman	Hubbardston	41.59	38.55	6.40	7.00	8.70	11.50
Buckeye Cotton Oil Co., Cincinnati, Ohio., Hingham Grain Mill, Inc.	Hingham	42.38	38.62	8.45	6.00	7.43	12.00
F. W. Brode & Co., Memphis, Tenn.							
Owl.......C. B. Sampson	Holyoke	42.47	41.00	7.96	6.00	8.00	10.00
Owl.......Knight Grain Co.	Newburyport	43.26	41.00	8.36	6.00	6.16	10.00
Owl,.......Glen Mills Cereal Co.	Rowley	43.52	41.00	8.04	6.00	5.37	10.00
Humphreys-Godwin & Co., Memphis, Tenn.							
Dixie,.......J. Allen	Brimfield	41.16	38.62	7.92	6.00	9.13	12.00
Dixie,.......T. Diante	Randolph	42.73	38.62	6.62	6.00	8.93	12.00
Forfat,.......H. G. Hill Co.	Williamsburg	41.99	38.62	9.52	6.00	7.35	12.00
Imperial Cotto Milling Co., Memphis, Tenn. Imperial Cotto, W. N. Potter Grain Co.	Princeton	43.74	41.00	9.49	8.00	7.08	9.00
Memphis Cot. Products Co., Memphis, Tenn. Selden,.......C. G. Burnham	Holyoke	43.08	41.00	8.32	6.00	6.10	10.00
Geo. B. Robinson, Jr., New York. Robin.......Bond Grain Co.	Charlton	42.52	41.00	8.12	6.00	8.67	10.00
J. E. Soper Co., Boston, Mass.							
Pilgrim,.......McKenzie & Winslow	New Bedford	41.51	38.50	8.34	5.00	7.23	10.00
Pioneer,.......F. H. Whitaker	E. Longmeadow	42.43	41.00	7.78	7.00	7.92	10.00
Pioneer,.......Stanley Wood Grain Co.	Taunton	42.21	41.00	6.40	7.00	7.89	10.00
Pioneer,.......Cutler Co.	W. Brookfield	41.51	41.00	6.57	7.00	10.30	10.00
Average		42.23	—	7.87	—	7.84	—
Prime							
American Cotton Oil Co., New York Red Tag,.......M. E. Ballou and Son	Becket	39.72	38.65	6.99	7.00	10.92	11.50
Buckeye Cotton Oil Co., Cincinnati, Ohio.							
Buckeye,.......Bedford Coal & Grain Co.	Bedford	39.67	38.62	7.17	6.00	11.00	12.00
Buckeye,.......J. N. Waite	Easthampton	38.79	38.62	6.63	6.00	10.87	12.00
Buckeye,.......N. Paquin & Sons	Fall River	39.54	38.62	6.67	6.00	10.62	12.00
Buckeye,.......J. Cushing & Co.	Hudson	38.79	38.62	7.05	6.00	11.35	12.00
Buckeye,.......Bowen & Fuller	Leominster	40.02	38.62	7.99	6.00	9.56	12.00
Buckeye,.......A. Milot & Son	Taunton	40.28	38.62	7.73	6.00	10.25	12.00
Buckeye,.......C. W. Bowker & Co.	Worcester	40.19	38.62	7.67	6.00	9.47	12.00
F. W. Brode & Co., Memphis, Tenn. Owl,.......J. O. Elison & Co.	Haverhill	40.81	41.00	7.74	6.00	7.12	10.00

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*Definitions used in connection with these tables merely indicate our basis of classification. In so far as possible they are based on trade usage, and are subject to future change and revision.

COTTONSEED MEAL.—*(Continued.)*

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
T.. H. Bunch Com. Co., Little Rock, Ark.							
Old Gold,.......F. Diehl & Son.............	Wellesley.....	39.14	38.62	7.62	6.00	9.85	12.00
Florida Cotton Oil Co., Jacksonville, Fla.							
Peerless,........W. C. Whitcher............	Stoneham......	39.14	41.00	9.86	7.50	8.77	8.00
Humphreys, Godwin & Co., Memphis, Tenn.							
Dixie,..........J. H. Nye.................	Brockton......	38.79	38.62	6.68	6.00	10.48	12.00
Dixie,..........J. C. Turner...............	Chester........	40.63	38.62	9.25	6.00	9.18	12.00
Dixie,..........Bryant & Soule............	Middleboro......	40.89	38.62	8.18	6.00	8.11	12.00
Dixie,..........M. H. Rolfe Est............	Newburyport..	39.05	38.62	6.56	6.00	10.92	12.00
Forfat,.........Eastern Grain Co...........	Bridgewater.....	39.05	38.62	7.11	6.00	9.58	12.00
Forfat,.........Conant & Co..............	Littleton.......	40.98	38.62	7.31	6.00	9.24	12.00
Forfat,.........J. Cushing & Co...........	Stoughton......	40.72	38.62	6.64	6.00	10.83	12.00
Imperial Cotto Milling Co., Memphis, Tenn.							
Imperial Cotto..Beaver Coal & Grain Co.....	Norwood........	40.72	41.00	8.33	8.00	6.77	9.00
Memphis Cot. Products Co., Memphis, Tenn.							
Selden,.........E. A. Cowee Est............	Worcester......	39.76	41.00	7.53	6.00	10.37	10.00
W. Newton Smith, Baltimore, Md.							
Dirigo,.........Highland Mills.............	Newton H'lands	39.23	38.62	9.15	7.00	9.52	10.50
Dirigo,.........Jaquith & Co..............	Woburn.........	38.53	38.62	7.80	7.00	10.88	10.50
J. E. Soper Co., Boston, Mass.							
Pilgrim,........Attleboro Grain Co..........	Attleboro......	40.37	38.50	7.76	5.00	9.66	10.00
Pilgrim,........Eastern Grain Co..........	Bridgewater..	40.28	38.50	7.16	5.00	10.00	10.00
Pilgrim,........Knight Grain Co............	Newburyport..	40.28	38.50	7.94	5.00	7.75	10.00
Average		39.81	—	7.62	—	9.72	—
Good.							
Buckeye Cotton Oil Co., Cincinnati, Ohio							
Buckeye*.......A. M. Haggart & Son........	Franklin......	38.40	39.00	6.31	6.50	11.23	10.00
Buckeye,*......H. K. Webster Co...........	Lawrence.......	38.18	38.62	7.74	6.00	9.93	12.00
Buckeye,*......Wilder & Wotton...........	Lowell........	37.44	38.62	6.17	6.00	12.12	12.00
Buckeye,*......A. Carr...................	Northboro......	36.95	38.62	6.36	6.00	13.00	12.00
T. H. Bunch Com. Co., Little Rock, Ark.							
Acme,..........Bond Grain Co.............	Charlton......	37.56	38.62	7.78	7.00	11.62	12.00
Humphreys Godwin & Co., Memphis, Tenn.							
Dixie,..........Mansfield Milling Co......	Mansfield.......	37.39	38.62	9.70	6.00	9.26	12.00
J. E. Soper Co., Boston, Mass.							
Pilgrim,........A. T. Knight..............	Hudson.........	38.26	38.50	6.63	5.00	11.32	10.00
Pilgrim,........H. K. Webster Co..........	Lawrence.......	37.83	38.50	6.77	5.00	10.66	10.00
Pioneer,........C. P. Washburn............	Middleboro......	37.53	41.00	6.91	7.00	10.97	10.00
Average		37.73	—	7.15	—	11.12	—
Cottonseed Feed.							
Humphreys, Godwin & Co., Memphis, Tenn.							
Creamo,........L. P. Adams...............	Dalton..........	23.42	20.00	4.71	5.00	22.62	22.00
Creamo,........W. Livingston.............	Lowell..........	20.84	20.00	4.09	5.00	22.96	22.00
77 Feed Meal...Plummer & Jennings Gr. Co.	New Bedford....	21.10	20.00	4.27	4.00	23.22	28.00
Southern Fiber Co., Portsmouth, Va.							
Royal,.........McKenzie & Winslow.......	Fall River.......	18.56	22.00	3.22	4.00	28.18	22.00
Royal,.........McKenzie & Winslow.......	Fall River.......	19.49	22.00	3.51	4.00	27.31	22.00
Royal,.........Taunton Grain Co..........	Taunton........	20.31	22.00	3.89	4.00	26.22	22.00
Average		20.62	—	3.95	—	25.08	—

*Misbranded Prime.

LINSEED MEAL.

Definition. Linseed Meal is the ground residue obtained in the extraction of oil from flaxseed.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
1 New Process.		%	%	%	%	%	%
American Linseed Co., Chicago, Ill.							
Cleveland Flax Meal . . Ropes Bros.	Salem	35.46	36.00	3.54	1.00	8.62	7.50
Eastern Grain Co.	Bridgewater	37.48	36.00	4.00	1.00	8.60	7.50
2. Old Process.							
American Linseed Co., New York.							
W. E. Bryant & Co.	Brockton	33.28	34.00	5.92	5.00	8.54	8.00
MacKenzie & Winslow	Fall River	32.84	34.00	6.02	5.00	8.52	8.00
E. J. Adams	Gt. Barrington	36.58	34.00	5.10	5.00	8.07	8.00
I. J. Morton & Co	Plymouth	33.80	34.00	4.58	5.00	8.05	8.00
C. O. Parmenter & Co.	S. Sudbury	35.03	34.00	5.96	5.00	8.43	8.00
Curley Bros.	Wakefield	34.06	34.00	6.12	5.00	7.00	8.00
American Milling Co., Peoria, Ill.							
Amco, H. K. Webster Co	Lawrence	34.06	32.00	6.56	6.00	7.70	11.00
Amco, A. Culver Co.	Rockland	30.56	32.00	4.95	6.00	8.99	11.00
Amco, C. G. Jordan	Weymouth	31.38	32.00	8.69	6.00	8.99	11.00
Kelloggs & Miller, Amsterdam, N. Y.							
Loham Bros	Marblehead	37.91	32.00	6.19	4.00	6.80	9.00
W. N. Potter Grain Co.	Princeton	37.56	32.00	6.12	4.00	7.90	9.00
H. G. Hill Co	Williamsburg	35.55	32.00	6.54	4.00	7.35	9.00
Mann Bros. Co., Buffalo, N. Y.							
A. M. Haggart & Son	Franklin	33.36	34.00	11.13	6.00	7.72	10.00
Morse Bros	Southbridge	34.06	34.00	7.29	6.00	8.18	10.00
Metzger Seed & Oil Co., Toledo, Ohio							
Pea Size . . . . . A. Carr	Northboro	34.15	32.00	6.18	5.00	8.45	10.00
Midland Linseed Products Co., New York							
A. H. Wood & Co.	Framingham	32.23	32.00	8.98	5.00	8.12	9.50
J. Cushing & Co.	Hudson	33.45	32.00	7.62	5.00	8.65	9.50
H. C. Puffer Co.	Huntington	30.56	32.00	9.78	5.00	9.22	9.50
J. Shea	Lawrence	33.98	32.00	6.97	5.00	8.45	9.50
M. G. Williams	Raynham	33.89	32.00	7.52	5.00	9.36	9.50
H. C. Puffer Co.	Springfield	33.56	32.00	8.82	5.00	7.26	9.50
Toledo Seed & Oil Co., Toledo, Ohio							
Major, G. F. Green Coal Co.	Campello	32.31	30.00	6.92	5.00	8.83	10.00
Major, G. F. Green Coal Co.	Campello	32.40	30.00	7.02	5.00	8.60	10.00
Major, W. G. Horton	Ipswich	31.96	30.00	6.78	5.00	8.98	10.00
Major, H. K. Webster Co.	Lawrence	32.14	30.00	6.68	5.00	8.46	10.00
Average		33.63	—	6.98	—	8.93	—

GLUTEN MEAL.

Definition. Gluten meal is a product obtained in the manufacture of starch and glucose from corn, and consists largely of the flinty portion of the kernel.

Corn Products Refining Co., New York.							
Diamond, MacKenzie & Winslow	Fall River	39.05	40.00	2.43	1.50	2.75	4.00
Diamond, Rollstone Grain Co.	Fitchburg	43.48	40.00	2.16	1.50	2.13	4.00
Diamond, G. F. Wetherbee Co.	Gardner	38.70	40.00	0.80	1.50	2.00	4.00
Diamond, Haverhill Milling Co.	Haverhill	43.13	40.00	1.71	1.50	2.80	4.00
Diamond, Haverhill Milling Co.	Haverhill	42.91	40.00	1.07	1.50	1.62	4.00
Diamond, O. H. Fiske	Huntington	43.06	40.00	1.85	1.50	2.75	4.00
Diamond, P. Foisy	New Bedford	43.13	40.00	1.61	1.50	2.37	4.00
Diamond, M. G. Williams	Raynham	40.85	40.00	0.73	1.50	1.88	4.00
Diamond, Morse Bros.	Southbridge	36.86	40.00	0.90	1.50	1.59	4.00
Diamond, C. R. Conant	Whitman	44.22	40.00	0.55	1.50	2.20	4.00
Diamond, Whitman Coal & Grain Co.	Whitman	39.49	40.00	1.58	1.50	2.95	4.00
Average		41.35	—	1.40	—	2.28	—

GLUTEN FEED. *(Continued)*

Definition. Gluten feed is a product obtained in the manufacture of starch and glucose from corn, and consists argely of the flinty portion of the kernel and corn bran.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
American Maize Products Co., New York.							
Cream of Corn. . M. E. Ballou & Son	Natick	24.63	23.00	1.77	2.50	7.35	8.50
Cream of Corn. . G. M. Foster	Lowell	24.43	23.00	1.52	2.50	7.12	8.50
Cream of Corn. . Wilder& Wotton	Lowell	24.61	23.00	1.86	2.50	6.58	8.50
Cream of Corn. . M. H. Rolfe Est.	Newburyport	26.62	23.00	1.77	2.50	4.70	8.50
Clinton Sugar Refining Co., Clinton, Iowa.							
Clinton, J. E. Merrick & Co.	Amherst	24.92	23.00	3.82	3.00	7.22	8.00
Clinton, J. Burkhardt	Beverly	24.52	23.00	4.18	3.00	7.25	8.00
Clinton, Milford Grain Co.	Milford	25.31	23.00	2.43	3.00	7.45	8.00
Clinton, A. Altman	New Bedford	24.17	20.00	5.15	3.00	7.14	8.00
Clinton, Warren Grain Co.	Warren	25.74	20.00	3.06	3.00	7.77	8.00
Corn Products Refining Co., New York.							
Buffalo, Eastern Grain Co.	Bridgewater	24.34	23.00	3.58	2.00	6.65	8.50
Buffalo, Eastern Grain Co.	Bridgewater	27.76	23.00	1.37	2.00	6.80	8.50
Buffalo, G. F. Green Coal Co.	Campello	25.13	23.00	2.66	2.00	7.22	8.50
Buffalo, Wallace Grain Co.	Clinton	23.12	23.00	2.95	2.00	6.59	8.50
Buffalo, Horwitz Grain Co.	New Bedford	27.32	23.00	2.14	2.00	6.63	8.50
Buffalo, Morse Bros.	Southbridge	24.52	23.00	2.43	2.00	6.85	8.50
Buffalo, Curley Bros.	Wakefield Jct.	27.67	23.00	2.89	2.00	5.70	8.50
Crescent, Scott Grain Co.	Amesbury	25.92	23.00	4.43	2.00	6.82	8.50
Crescent, A. F. Sanctuary	Amherst	28.49	23.00	1.94	2.00	6.90	8.00
Crescent, John Franks	New Bedford	24.69	24.00	2.41	2.00	7.23	8.50
Globe, Scott Grain Co.	Amesbury	28.28	23.00	3.75	2.00	5.00	8.50
Queen, H. C. Bowen & Son	Cheshire	21.45	20.00	4.26	2.00	6.65	8.50
Douglas & Company, Cedar Rapids, Iowa.							
Douglas, A. H. Wood & Co.	Framingham	22.86	20.00	3.40	2.00	6.50	8.00
Douglas, John Franks	New Bedford	24.87	20.00	2.96	2.00	6.42	8.00
J. C. Hubinger Bros. Co., Keokuk, Iowa.							
K. K. K. A. Dodge & Son, Corp.	Beverly	23.56	23.50	4.49	2.40	7.10	7.50
K. K. K. W. S. Horton	Ipswich	24.08	23.50	3.67	2.40	7.72	7.50
K. K. K. L. H. Kirk	Wakefield	24.87	23.50	3.45	2.40	6.79	7.50
Huron Milling Co., Harbor Beach, Mich.							
Jenks, Cummings, Chute & Co.	Woburn	26.09	22.00	3.56	3.00	5.82	8.00
E. Soper Co., Boston, Mass.							
Bay State W. H. Garland	Gloucester	23.12	20.00	2.25	2.00	7.84	8.00
Bay State, W. H. Garland	Gloucester	23.21	20.00	2.00	2.00	7.18	8.00
A. E. Staley Manufacturing Co., Decatur, Ill.							
Staley's, W. N. Potter & Co.	Charlemont	24.08	23.00	2.28	2.50	6.01	12.00
Staley's, J. N. Waite	Easthampton	25.39	23.00	2.91	2.50	6.13	12.00
Staley's, T. H. Emerson	E. Weymouth	23.91	23.00	1.58	2.50	7.14	12.00
Staley's, F. Gauvin	Marlboro	23.73	23.00	2.05	2.50	5.99	12.00
Staley's, F. Gauvin	Marlboro	25.92	23.00	3.46	2.50	5.88	12.00
Staley's, C. O. Parmenter & Co.	S. Sudbury	23.64	23.00	1.54	2.50	5.98	12.00
Staley's, W. N. Potter's Sons	Springfield	24.87	23.00	3.00	2.50	6.33	12.00
Average		24.94	—	2.86	—	6.68	—

DISTILLERS' DRIED GRAINS.

Definition. Distillers' dried grains are the dried residue obtained from cereals in the manufacture of alcohol and distilled liquors.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
Ajax Milling & Feed Co., New York.							
Ajax Flakes, . . . Eastern Grain Co.	Bridgewater	30.21	30.00	11.22	11.00	11.42	14.00
Ajax Flakes, . . . Eastern Grain Co.	Bridgewater	33.80	30.00	11.18	11.00	11.73	14.00
Ajax Flakes, [illegible]	[illegible]	34.24	30.00	11.38	11.00	9.83	14.00
Ajax Flakes, . . . J. Cushing & Co.	Fitchburg	31.[illegible]	30.00	11.10	11.00	11.26	14.00
Ajax Flakes, . . . W. N. Potter Sons & Co.	Hadley	33.05	30.00	12.81	11.00	11.45	14.00
Ajax Flakes, . . . O. H. Fiske	Huntington	31.77	30.00	10.45	11.00	11.25	14.00
Ajax Flakes, . . . C. B. Sawin & Son	Southboro	32.31	30.00	11.33	11.00	10.81	14.00
Ajax Flakes, . . . Morse Bros.	Southbridge	29.82	30.00	9.81	11.00	10.74	14.00
Atlantic Export Co., Chicago, Ill.							
Atexco, . . . M. W. [illegible]	Webster	33.01	30.00	11.96	10.00	11.85	13.00
Atexco, . . . J. B. Garland & Son	Worcester	34.94	30.00	13.07	10.00	11.49	13.00
Atlantic, . . . Bond Grain Co.	Charlton Depot	30.74	28.00	10.10	6.00	10.24	14.00
Atlantic, . . . J. B. Garland & Son	Worcester	29.77	28.00	9.18	6.00	11.91	14.00
Continental Cereal Co., Peoria, Ill.							
Continental, . . . G. W. [illegible]	Charlton	30.38	29.00	9.13	12.50	6.64	10.50
Continental, . . . Potter Bros. & Co.	N. Adams	30.47	29.00	9.10	12.50	7.54	10.50
Continental, . . . Potter Grain Co.	Shelburne Falls	28.02	29.00	8.29	12.50	6.91	10.50
The Dewey Bros. Co., Blanchester, Ohio.							
Eagle 3D, . . . Bryant & Soule	Middleboro	27.76	30.00	10.62	10.00	8.62	13.00
Eagle 3D, . . . H. C. Puffer Co.	Springfield	31.26	30.00	12.79	10.00	11.60	13.00
Queen 3D, . . . Albert Carr	Northboro	*14.19	18.00	5.78	4.00	15.03	15.00
Hottelet & Co., Milwaukee, Wis.							
Hector, . . . A. F. Sanctuary	Amherst	30.72	30.00	9.32	10.00	9.72	14.00
Hector, . . . Stanley Wood Grain Co.	Taunton	29.48	30.00	7.71	10.00	11.19	14.00
Rye, . . . Lexington Grain Co.	Lexington	*14.89	16.00	4.83	8.00	14.38	14.00
Ubiko Milling Co., Cincinnati, Ohio.							
Fourex, . . . W. F. [illegible] & Co.	Brockton	32.49	31.00	12.68	12.00	12.55	13.00
Fourex, . . . F. H. Whitaker	E. Longmeadow	27.12	31.00	13.51	12.00	12.62	13.00
Fourex, . . . F. F. Woodward Co.	[illegible]	32.14	31.00	7.88	12.00	12.76	13.00
Fourex, . . . A. T. Knight & Co.	Hudson	31.58	31.00	12.29	12.00	7.93	13.00
Fourex, . . . C. P. Washburn	Middleboro	31.35	31.00	7.25	12.00	12.30	13.00
Fourex, . . . The Cutler Grain Co.	S. Framingham	34.24	31.00	7.59	12.00	12.20	13.00
Fourex, . . . The Cutler Grain Co.	S. Framingham	30.91	31.00	9.94	12.00	7.05	13.00
Average		31.28	—	10.44	—	10.51	—

*Not included in average.

MALT SPROUTS.

Definition. Malt sprouts consist of the dried sprouts of the barley grain removed after the process of malting.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found.	Protein Guar.	Fat Found.	Fat Guar.	Fiber Found.	Fiber Guar.
American Malting Co., Buffalo, N. Y.							
J. E. Merrick & Co.	Amherst	27.39	15.63	1.43	1.54	12.00	15.70
MacKenzie & Winslow	Fall River	23.72	15.63	0.93	1.54	13.31	15.70
J. B. Bridges & Co.	So. Deerfield	26.01	15.63	0.86	1.54	12.72	15.70
Warner Bros.	Sunderland	25.94	15.63	1.56	1.54	11.84	15.70
Atlantic Export Co., Chicago, Ill.							
J. B. Garland & Sons	Worcester	26.79	22.00	1.08	1.00	13.33	16.00
Chas. M. Cox Co., Boston, Mass.							
C. O. Parmenter	S. Sudbury	23.03	25.00	1.38	1.50	14.14	17.00
M. C. Rankin & Co., Milwaukee, Wis.							
Jersey, . . . J. W. Doon & Son	Natick	28.46	25.00	1.72	1.50	10.83	17.00
D. W. Ranlet Co., Boston, Mass.							
Ropes Bros.	Danvers	26.58	26.00	1.25	1.00	11.59	12.00
Average		26.62	—	1.28	—	12.47	—

BREWERS' DRIED GRAINS.

Definition. Brewers' dried grains are the dried residue obtained from cereals in the manufacture of malted liquors

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
Anheuser Busch Brewing Co., St. Louis, Mo.							
Bond Grain Co.	Charlton	30.29	21.00	7.00	6.00	12.78	18.00
J. B. Garland & Son	Worcester	28.02	21.00	7.16	6.00	12.55	18.00
Atlantic Export Co., Chicago, Ill.							
Lexington Grain Co.	Lexington	30.47	24.00	5.53	5.00	12.09	17.00
The James Hanley Brew. Co., Providence, R. I.							
C. O. Parmenter & Co.	S. Sudbury	28.54	20.00	6.53	6.00	14.75	18.00
Providence Brewing Co., Providence, R. I.							
W. L. Palmer	Medway	31.70	25.00	5.80	5.00	11.10	15.00
Thorne Bros.	Millis	26.22	25.00	6.33	5.00	12.55	15.00
F. A. Fales Co.	Norwood	28.89	25.00	5.61	5.00	13.33	15.00
Weld & Beck	Southbridge	31.61	25.00	5.88	5.00	10.94	15.00
Weld & Beck	Southbridge	26.79	25.00	4.98	5.00	12.98	15.00
C. E. Terry	W. Springfield	28.81	25.00	6.34	5.00	10.38	15.00
Average		29.13	—	6.12	—	12.35	—

WHEAT MIDDLINGS.

Definition. Wheat middlings consist of the finer portions of the wheat kernel as separated from it in the manufacture of flour. While there is no marked line of difference wheat middlings can be placed in one of three classes depending upon the amount of flour present; red dog or low grade, flour middlings, or standard middlings.

Amendt Milling Co., Monroe, Mich.							
Amco, I. J. Rowell	Pepperell	17.43	15.00	5.37	5.00	5.23	4.30
Amco, Worcester Hay & Grain Co.	W. Brookfield	17.60	15.00	5.03	5.00	4.34	4.30
Baldwin Flour Mills, Minneapolis, Minn.							
*Flour, E. J. Adams	Gt. Barrington	18.96	16.50	5.35	5.00	6.84	7.00
*Shorts, Plummer & Jennings Gr. Co.	New Bedford	18.30	15.00	5.81	5.00	7.50	11.00
*Shorts, Beaver Coal & Grain Co.	Norwood	16.55	16.00	5.27	5.00	9.00	11.00
A. H. Brown & Bros., Boston, Mass.							
Onward, C. G. Jordan	Weymouth	17.43	17.00	5.37	5.00	6.80	8.00
Geo. C. Christian, Minneapolis, Minn.							
*Poland, H. H. Capen	Spencer	16.99	14.00	5.21	4.00	6.65	9.50
Wm. A. Coombs Milling Co., Coldwater, Mich.							
Standard, H. J. Williams	Lowell	17.60	16.00	4.64	3.00	6.68	9.00
Standard, H. J. Williams	Lowell	18.30	16.00	4.50	3.00	7.15	9.00
William C. Crocker, Minneapolis, Minn.							
Red Dog, H. Bruckman	So. Lawrence	18.65	17.00	5.38	5.00	3.66	4.00
*Standard, H. Bruckman	So. Lawrence	18.39	15.00	6.07	5.00	7.13	9.50
Fancy, F. A. Fales & Co.	Norwood	19.79	17.00	6.28	5.00	5.80	6.00
J. G. Davis Co., Rochester, N. Y.							
Standard, E. A. Cole	Housatonic	18.26	15.00	6.17	4.50	9.30	10.50
Eagle Roller Mill Co., New Ulm, Minn.							
Superb Red Dog Geo. R. Doane	N. Brookfield	20.05	19.82	5.47	5.93	4.10	4.30
Everett-Aughenbaugh & Co., Waseca, Minn.							
Winged Horse, C. H. Spring Co.	Newton Lower Fls	19.88	15.00	5.48	3.00	7.30	10.00

*With not exceeding mill run of ground screenings.

WHEAT MIDDLINGS.—(*Continued*.)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
Ewart & Lake, Groveland, N. Y.							
Flour,..........C. F. Pease................	Chester.........	16.83	14.00	4.96	3.50	4.01	6.00
Federal Milling Co., Lockport, N. Y....							
Sphinx,........C. O. Parmenter & Co.......	S. Sudbury......	17.86	17.00	5.27	4.50	4.88	9.00
Glen Mills Cereal Co., Rowley, Mass.							
Standard,......Glen Mills Cereal Co........	Rowley........	14.80	15.00	4.23	4.00	9.12	8.00
Wm. Hamilton & Son, Honeye Falls, N. Y.							
The Cutler Co..............	N. Wilbraham...	16.81	16.20	4.45	4.75	3.90	4.40
Hecker-Jones-Jewell Milling Co.,Buffalo, N. Y.							
Red Dog,......Rollstone Grain Co..........	Fitchburg.... ..	18.04	18.00	4.65	5.50	1.73	4.00
Flour,..........Rollstone Grain Co..........	Fitchburg.......	18.56	16.00	5.98	5.00	6.49	8.00
Standard.......The Albert Culver Co.......	Rockland........	19.00	16.00	6.13	5.50	7.07	8.00
J. A. Hinds & Co., Rochester, N. Y.							
Standard,......Bowen & Fuller............	Leominster......	19.70	17.50	6.30	5.30	5.45	7.50
J. B. A. Kern & Sons, Milwaukee, Wis.							
Eagle Standard A. Culver Co...............	Rockland........	19.18	18.00	5.05	5.00	7.62	7.30
Maple Leaf Milling Co., Kenora, Ont. Canada.							
Canadian,......J. O. Ellison & Co..........	Haverhill.......	15.50	15.00	5.20	4.00	6.35	9.00
Canadian,......Prentiss Brooks & Co.......	Holyoke........	17.69	15.00	5.46	4.00	6.34	9.00
Canadian,......G. B. Brown...............	Ipswich........	16.64	15.00	4.79	4.00	6.88	9.00
Rex,...........Mackenzie & Winslow, Inc. .	New Bedford....	16.20	—	4.15	—	6.13	—
Marshall Milling Co., Marshall, Minn.							
Shorts,.........A. A. Putney & Sons........	Brookfield.......	17.30	7.00	5.87	5.04	8.06	9.44
New England Flour Co., Boston., Mass.							
Powerful St'r'd..J. Burkhardt...............	Beverly.........	17.82	16.00	5.83	4.00	8.76	10.00
New Prague Flouring Mill Co., New Prague, Minn.							
Seal of Minn. Stand. Bosworth & Son......	Leominster...	19.00	17.75	6.17	5.80	5.86	6.75
Seal of Minn. Stand. I. J. Rowell..........	Pepperell....	17.78	17.00	5.67	5.50	4.38	5.00
Niagara Falls Milling Co., Niagara Falls, N. Y.							
Standard,......A. Dodge & Sons Corp......	Beverly.........	17.51	16.00	5.43	4.00	8.27	10.00
Standard,......Jacobson Bros..............	N. Dartmouth...	17.51	16.00	5.57	4.00	7.98	10.00
Standard,......Cutler Grain & Coal Co.....	Palmer..........	17.51	16.00	5.92	4.00	7.56	10.00
Northwestern Con. Milling Co., Minneapolis, Minn.							
* ....F. Diante..................	Randolph.....	18.56	15.00	5.75	4.50	8.49	10.00
*Country Stand. F. F. Woodward Co.........	Fitchburg......	18.04	17.00	5.28	4.90	8.07	10.00
Pillsbury Flour Mills Co., Minneapolis, Minn.							
*A.............M. E. Ballou & Son.........	Chester.......	18.34	15.00	5.21	4.50	6.75	6.00
*B.............Eastern Grain Co...........	Bridgewater...	16.03	15.00	4.75	4.50	9.77	10.00
*B.............Mackenzie & Winslow......	Fall River....	15.33	15.00	6.00	4.50	9.77	8.00
XX Daisy.. Joseph Allen.	Brimfield......	18.91	17.00	4.67	4.50	3.56	4.00
Quaker Oats Co., Chicago, Ill.							
Bell Cow Stand. W. J. Meek................	Fall River.......	18.21	15.30	5.06	5.50	8.58	7.60
Red Wing Milling Co., Red Wing, Minn.							
Bixota Red Dog J. H. Nye..................	Brockton.......	19.44	18.00	5.53	5.00	1.95	1.75
Bixota Red Dog J. H. Nye ..	Brockton........	17.16	12.70	4.07	4.00	1.38	1.10
Rush City Milling Co., Rush City, Minn.							
Flour,..........A. H. Wood & Co...........	Framingham.....	17.34	16.00	3.03	3.50	1.74	4.00
F. W. Stock & Sons, Hillsdale, Mich. .							
W. H. Smith..............	Northampton..	17.95	16.50	5.31	4.00	6.61	6.00

*With not exceeding mill run of ground screenings.

WHEAT MIDDLINGS.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found	Guar.
		%	%	%	%	%	%
Thompson Milling Co., Lockport, N. Y.							
Angelus Flour,. . Geo. F. Wetherbee Co.......	Gardner.........	16.90	15.50	4.69	4.00	3.94	8.00
Angelus Flour,. . Geo. F. Wetherbee Co.......	Gardner.........	17.43	15.00	4.56	4.00	4.57	10.00
Geo. Tileston Milling Co., St. Cloud, Minn.							
C. G. Burnham............	Holyoke.........	18.21	15.00	5.95	4.00	4.44	8.00
Traders & Producers Supply Co., Buffalo, N. Y.							
*Chippewa,......J. Burkhardt..............	Beverly.........	17.25	16.00	4.36	5.00	6.72	10.00
*Chippewa,......W. G. Horton..............	Ipswich.........	17.60	16.00	5.00	5.50	7.28	10.00
Valley City Milling Co., Grand Rapids, Mich.							
Farmers Favorite, M. H. Rolfe Est..........	Newburyport....	16.38	15.00	4.75	5.50	7.26	4.25
Victor Milling Co., Victor, N. Y.							
M. H. Rolfe Est............	Newburyport....	18.83	17.50	6.34	5.00	7.35	10.00
Voight Milling Co., Grand Rapids, Mich.							
Voights,........M. E. Ballou & Son.........	Becket..........	17.25	14.00	5.06	6.50	5.18	6.00
Washburn & Crosby Co., Minneapolis, Minn.							
*Flour,.........D. F. Howard & Sons.......	Ware...........	18.56	17.00	5.50	5.00	6.50	6.00
*Standard,.....Scott Grain Co.,............	Amesbury.......	19.18	15.00	5.87	4.00	7.60	9.50
Western Canada Flour Mills Co., Toronto, Can.							
Western Canada, W. E. Bryant & Co.........	Brockton........	18.74	18.36	5.85	6.04	5.50	7.51
Western Canada, A. Milot & Sons...........	Taunton........	17.86	18.36	5.30	6.04	5.40	7.51
Wisconsin Milling Co., Menomonie, Wis.							
G. M. Foster..............	Lowell..........	17.43	16.50	4.89	5.00	5.83	6.46
Average		17.84	—	5.28	—	6.25	—

*With not exceeding mill run of ground screenings.

WHEAT MIXED FEEDS.

Definition. Wheat mixed feed is a mixture of the products other than the flour obtained from the milling of the wheat berry.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.
Acme-Evans Co., Indianapolis, Ind.							
*Acme,.........M. H. Rolfe Est............	Newburyport....	16.99	16.50	4.20	4.00	7.63	8.00
F. Diehl & Son.............	Wellesley........	17.34	16.50	4.35	4.00	6.47	9.00
Amendt Milling Co., Monroe, Mich.							
Amco,....Albert Carr......................	Northboro.......	16.73	15.00	5.00	4.00	6.83	8.00
E. W. Bailey Co., Montpelier, Vt.							
Fancy Winter,. . J. E. Merrick & Co.........	Amherst.........	16.75	16.00	4.37	3.75	7.72	8.50
Britton Milling Co., Britton, So. Dakota.							
Favorite,.......J. B. Higgins..............	Chicopee........	17.08	14.40	5.72	4.70	7.79	7.00
Claro Milling Co., Lakeville, Minn.							
Claro,.........Horvitz Grain Co...........	New Bedford....	16.81	15.00	4.99	3.00	7.62	11.00
Wm. A. Combs Milling Co., Coldwater, Mich.							
Winter,........Wilder & Wotton...........	Lowell	17.34	15.00	5.30	3.00	8.93	10.00

*With not to exceed mill run of ground screenings.

WHEAT MIXED FEEDS.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
Chas. M. Cox Co., Boston, Mass.							
Paragon, W. L. Palmer	Medway	16.50	15.50	4.35	4.00	8.59	10.00
Paragon, S. R. Carter	West Berlin	16.46	15.50	4.53	4.00	7.41	10.00
Wirthmore, John Shea	Lawrence	18.30	16.00	5.09	4.00	6.79	7.00
Wirthmore, Horvitz Grain Co.	New Bedford	15.37	16.00	2.43	4.00	6.50	7.00
Wirthmore, M. G. Williams	Raynham	16.03	16.00	4.58	4.00	6.95	7.00
Wirthmore, H. Bruckman	S. Lawrence	17.60	16.00	4.68	4.00	6.63	7.00
Wirthmore, C. R. Conant	Whitman	16.46	16.00	4.69	4.00	7.41	7.00
Wirthmore, Whitman Grain & Coal Co.	Whitman	16.90	16.00	4.54	4.00	6.63	7.00
Wirthmore, W. F. Little	Worcester	16.55	16.00	4.70	4.00	7.98	7.00
William G. Crocker, Minneapolis, Minn.							
* F. A. Fales & Co.	Norwood	18.74	16.00	5.93	4.50	7.21	9.00
* C. E. Terry	W. Springfield	16.38	16.00	5.38	4.50	9.01	9.00
Duluth Superior Milling Co., Duluth, Minn.							
*Boston, Bowen & Fuller	Leominster	17.86	15.00	5.50	4.00	8.21	9.50
*Boston, Bowen & Fuller	Leominster	17.34	16.00	5.27	4.50	8.16	9.50
*Boston, C. B. Sawin & Son	Northboro	17.25	16.00	5.20	4.50	7.90	9.50
*Boston, C. B. Sawin & Son	Southboro	17.51	16.00	5.48	4.50	8.13	9.50
*Boston, Taunton Grain Co.	Taunton	17.16	15.00	5.35	4.00	8.52	9.50
*Boston, H. G. Hill Co.	Williamsburg	17.25	16.00	5.66	4.50	8.62	9.50
Federal Milling Co., Lockport, N. Y.							
Lucky, M. Callahan Co.	Holyoke	18.13	15.00	5.43	4.00	7.65	10.00
Lucky, Stanley Wood Grain Co.	Taunton	16.99	15.00	5.60	4.00	8.10	10.00
Garland Milling Co., Greensburg, Ind.							
*Garland, Ropes Bros.	Danvers	16.29	15.25	4.48	3.75	6.89	9.00
J. B. Garland & Son, Worcester, Mass.							
Royal Worcester, Bond Grain Co.	Charlton	17.60	16.00	5.13	4.50	6.65	7.00
Royal Worcester, Bond Grain Co.	Charlton	18.39	16.00	5.29	4.50	6.60	7.00
Royal Worcester, J. B. Garland & Son	Worcester	18.13	16.00	4.71	4.50	6.56	7.00
Glen Ullin Roller Mills, Glen Ullin, N. Dakota.							
J. B. Garland & Son	Worcester	15.94	18.50	4.69	4.40	5.82	9.30
Gopher State Milling Co., Little Falls, Minn.							
Royal, D. Craig	Plymouth	16.38	14.02	4.56	4.02	8.50	8.00
Grafton Roller Mill Co., Grafton, N. Dakota.							
Grafton, A. E. Lawrence & Son	Ayer	17.86	15.40	4.78	4.50	6.52	9.00
Grafton, G. F. Green Coal Co.	Campello	17.69	15.00	4.97	4.50	7.15	9.90
Grafton, Mackenzie & Winslow	Fall River	17.78	15.40	3.85	4.50	6.23	9.30
Grafton, Prosper Foisy	New Bedford	18.39	15.40	5.01	4.50	6.28	9.30
Grafton, F. H. Crane & Sons	Quincy Adams	17.16	15.40	5.05	4.50	6.50	9.30
The Harter Milling Co., Toledo, Ohio.							
Harters, Knight Grain Co.	Newburyport	16.99	15.00	4.83	4.00	7.94	8.00
Harters, Knight Grain Co.	Newburyport	16.90	16.00	4.85	5.00	7.93	7.25
Harters, F. A. Fales & Co.	Norwood	16.81	15.00	5.46	4.00	8.30	8.00
Harters, M. G. Williams	Raynham	17.60	16.00	5.16	5.00	6.61	7.25
Harters, Weld & Beck	Southbridge	17.08	15.00	4.87	4.00	6.66	8.00
Harters, Weld & Beck	Southbridge	16.38	15.00	4.89	4.00	7.33	8.00
Hecker-Jones-Jewell Milling Co., New York.							
*Manhattan, E. J. Adams	Gt. Barrington	16.82	15.94	4.74	5.65	6.61	7.10
Kemper Mill & Elevator Co., Kansas City, Mo.							
*Anchor, Mackenzie & Winslow	Fall River	18.04	16.00	4.09	4.00	7.16	10.00
*Cresent, G. C. Turner	Chester	17.34	16.00	4.20	4.00	7.65	10.00
*Cresent, M. G. Williams	Raynham	17.34	16.00	3.91	4.00	6.99	10.00
*Cresent, Weld & Beck	Southbridge	18.17	16.00	3.75	4.00	7.04	10.00
Kehlors Flour Mills, St. Louis, Mo.							
Kehlors, William Livingston	Lowell	18.83	15.00	4.26	4.00	7.57	8.00

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*With not to exceed mill run of ground screenings.

WHEAT MIXED FEEDS.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
Lawrenceburg Roller MillsCo.Lawrenceburg,Ind.							
Snow Flake.....C. P. Washburn	Middleboro	16.20	15.20	3.44	4.30	7.28	8.00
Snow Flake,....Mackenzie & Winslow, Inc.	New Bedford	17.34	15.20	4.65	4.30	6.28	8.00
Snow Flake,....T. E. Borden	N. Westport	16.46	15.20	4.27	4.30	7.16	8.00
Snow Flake,....A. J. Richards & Son	Weymouth	16.73	15.20	4.02	4.30	8.23	8.00
Millbourne Mills, Philadelphia, Pa.							
Millbourne,.....Eastern Grain Co	Bridgewater	15.76	14.00	4.34	3.00	6.30	8.00
Northwestern Consolidated Milling Co., Minneapolis, Minn.							
Planet,.........G. W. King	Charlton	18.91	15.00	5.90	4.00	5.92	8.00
Planet,.........E. E. Tarbell	Pepperell	18.91	15.00	5.38	4.00	5.78	8.00
Planet,.........I. J. Rowell	Pepperell	17.86	15.00	5.40	4.00	5.77	8.00
Planet,.........W. P. Griffin	Pittsfield	18.88	15.00	5.61	4.00	6.01	8.00
Planet,.........W. N. Potter Grain Co	Princeton	18.35	16.00	5.38	4.00	5.13	8.00
Planet,.........H. P. Howland	Spencer	18.83	15.00	5.08	4.00	5.50	8.00
Northwestern Milling Co., Little Falls, Minn.							
W. J. Meek	Fall River	17.43	14.02	5.00	4.08	8.28	8.00
G. M. Foster	Lowell	17.34	14.02	4.29	4.08	7.25	8.00
Whitman Coal & Grain Co.	Whitman	17.43	14.02	4.51	4.00	7.07	10.00
N. E. Flour Co., Boston, Mass.							
Hiawatha,......H. Bruckman	So. Lawrence	18.21	15.00	5.22	3.00	7.21	10.00
Powerful,.......G. W. King	Charlton	17.60	15.00	5.09	3.00	6.68	10.00
Pillsbury Flour Mills Co., Minneapolis, Minn.							
* ....J. Cushing & Co.	Fitchburg	17.34	16.00	4.98	4.50	6.08	8.00
* ....Bryant & Soule	Middleboro	17.43	16.00	4.53	4.50	6.62	8.00
* ....Bryant & Soule	Middleboro	17.43	16.00	4.72	4.50	6.54	9.00
* ....John Franks	New Bedford	17.08	16.00	4.79	4.50	6.08	8.00
* ....I. J. Rowell	Pepperell	17.43	16.00	4.68	4.50	6.98	9.00
* ....W. K. Gilmore & Sons Inc.	Walpole	17.69	16.00	4.81	4.50	6.51	9.00
Royal Milling Co., Great Falls, Mont.							
*Royal,.........W. H. Horton	Ipswich	17.25	16.00	4.94	4.00	6.71	8.00
Rush City Milling Co., Rush City, Minn.							
Radison,........A. H. Wood & Co	Framingham	16.38	13.50	3.62	4.60	7.50	9.75
Russell Flour Co., Albany, N. Y.							
Regular,........Squier & Co	Monson	17.34	15.00	5.15	4.50	5.70	10.00
Regular,........E. C. Frost	Shelburne Falls	17.60	15.00	5.42	4.50	7.54	10.00
Russell Miller Milling Co., Minneapolis, Minn.							
Occident,.......Brookfield Grain Co.,	Brookfield	17.25	15.00	5.11	4.50	6.55	10.00
Occident,.......Mackenzie & Winslow, Inc.,	Fall River	16.95	15.00	5.24	4.50	7.85	10.00
Occident,.......John Franks	New Bedford	16.99	15.00	5.20	4.50	6.27	10.00
Occident,.......N. Attleboro Grain Co.	N. Attleboro	16.99	15.00	5.57	4.50	7.25	10.00
Occident,.......C. W. & G. W. Nightingale.	Quincy Adams	17.08	16.00	5.03	4.50	7.55	11.00
Occident,.......J. Cushing & Co.	Stoughton	18.48	15.00	5.06	4.50	6.99	10.00
Occident,.......L. H. Kirk	Wakefield	17.43	15.00	5.07	4.50	7.50	10.00
Shane Bros. & Wilson Co., Hastings, Minn.							
King Midas,....Geo. R. Doane	No. Brookfield,	17.86	15.50	5.06	4.00	7.48	9.00
Sheffield King Milling Co., Minneapolis, Minn.							
Gold Mine,.....Bond Grain Co	Charlton	17.43	15.90	5.25	4.90	7.61	8.90
Gold Mine,.....G. W. King	Charlton	18.04	15.90	5.24	4.90	7.70	8.90
Gold Mine,.....Griffin Bros	Fall River	17.08	15.90	4.97	4.90	8.12	8.90
Gold Mine,.....F. Diante	Randolph	17.25	15.90	4.95	4.90	7.69	8.90
Gold Mine,.....H. P. Howland	Spencer	16.64	15.90	5.03	4.90	7.98	8.90
Gold Mine,.....A. Milot & Son	Taunton	16.55	15.90	4.78	4.90	7.56	8.90
Gold Mine,.....J. B. Garland & Son	Worcester	17.51	15.90	5.00	4.80	7.58	8.90
Gold Mine,.....Geo. A. Stevens	Worcester	17.60	15.90	5.09	4.90	7.34	8.90

*With not to exceed mill run of ground screenings.

WHEAT MIXED FEEDS.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
Sparks Milling Co., Alton, Ill.							
*Try Me,.......John F. Shine..............	Dedham.........	17.34	16.00	4.09	4.50	7.07	8.00
*Try Me,.......C. H. Spring Co.............	Newton Lr. Falls	19.09	15.00	3.72	3.75	6.58	10.00
*Try Me,.......Stanley Wood Grain Co.....	Taunton........	16.38	16.00	4.51	3.50	7.31	8.00
*Wabash,......Eastern Grain Co...........	Bridgewater.....	16.20	14.00	4.15	3.50	6.75	8.00
David Stott, Detroit, Mich.							
Stott's Heavy,..Morse Bros................	Southbridge.....	16.66	16.00	4.64	4.00	6.99	9.00
Honest,........Howe Bros.................	Gardner.........	16.55	16.50	4.76	5.00	7.26	8.00
Honest,........Milford Grain Co...........	Milford.........	16.73	16.50	4.89	5.00	7.98	8.00
Honest,........E. A. Cowee Est............	Worcester.......	17.08	16.00	4.86	5.00	7.05	8.00
Stratton & Co., Concord, N. H.							
William Livingston.........	Lowell..........	15.06	15.78	4.07	4.74	5.91	8.00
Thompson Milling Co., Lockport, N. Y.							
Angelus,........N. Paquin & Sons..........	Fall River.......	16.95	15.00	4.67	4.00	6.12	10.00
Valier & Spies Milling Co., Marine, Ill.							
Valiers,.........I. J. Rowell................	Pepperell........	17.16	15.00	4.85	4.00	7.56	9.00
C. W. Wagar & Co., Philadelphia, Pa.							
*Middlesex,.....Mackenzie & Winslow, Inc..	Fall River.......	17.60	15.00	5.01	2.00	7.65	8.00
*Dakota,.......O. H. Fiske................	Huntington......	19.28	16.00	5.19	2.00	7.55	8.00
Waggoner-Gates Milling Co., Independence, Mo.							
Mill Run,......Eastern Grain Co...........	Bridgewater.....	16.81	15.00	4.34	3.00	6.80	9.00
Washburn & Crosby Co., Minneapolis, Minn.							
*Superior,......Brown Bros................	Bondsville.......	16.81	16.00	5.05	4.50	7.30	9.00
*Superior,......A. T. Knight & Co..........	Hudson..........	16.38	16.00	4.80	4.50	8.46	9.00
*Superior,......W. P. Barney..............	Seekonk.........	18.00	16.00	5.17	4.50	8.15	9.00
The Williams Bros. Co., Kent, Ohio.							
Kent,..........Attleboro Grain Co.........	Attleboro........	16.81	12.00	4.35	3.00	6.58	15.00
Kent,..........Mansfield Milling Co........	Mansfield.......	16.11	12.00	4.57	2.00	6.88	15.00
Kent,..........Plummer-Jennings Grain Co.	New Bedford....	15.55	12.00	4.08	2.00	5.78	15.00
Kent,..........C. Parkinson...............	Seekonk.........	16.81	12.00	3.80	2.00	6.43	8.00
Kent,..........Curley Bros................	Wakefield.......	15.76	12.00	4.19	2.00	5.44	15.00
Kent,..........E. A. Cowee Est............	Worcester.......	16.11	12.00	4.47	2.00	8.14	15.00
Kent,..........A. W. Whittemore & Co......	Worcester.......	16.01	12.00	4.38	2.00	6.87	15.00
Average		17.21	—	4.79	—	7.14	—

*With ground screenings not to exceed mill run.

WHEAT BRAN.

Definition. Wheat bran is the coarse outer coatings of the wheat berry.

Amendt Milling Co., Monroe, Mich.							
Amco, ...Albert Carr................	Northboro.......	15.85	14.00	4.21	3.00	8.68	9.50
Baldwin Flour Mills, Minneapolis, Minn.							
* ....Beaver Coal & Grain Co.....	Norwood........	15.76	15.00	6.27	5.00	10.26	12.00
Bay State Milling Co., Winona, Minn.							
Winona,........M. G. Williams............	Raynham.......	16.29	15.00	5.00	5.00	9.91	11.00
A. H. Brown & Bros., Boston, Mass.							
Onward,........C. G. Jordan..............	Weymouth......	16.73	15.00	5.35	4.75	10.24	11.00

WHEAT BRAN.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
Chas. M. Cox Co., Boston, Mass.							
Dudley, J. P. Thacher	Littleton	15.68	15.50	4.62	4.00	9.95	9.00
Monogram, G. F. Green Coal Co.	Campello	16.03	15.50	4.48	4.00	10.15	9.00
Monogram, W. J. Meek	Fall River	16.03	15.00	4.98	4.00	9.78	10.00
Monogram, The Albert Culver Co.	Rockland	15.50	15.50	4.92	4.00	10.53	9.00
Monogram, A. N. Whittemore & Co.	Worcester	15.24	15.50	5.12	4.00	10.14	9.00
Crystal Milling Co., Lake Crystal, Minn.							
Coarse, H. K. Webster Co.	Lawrence	15.76	13.25	5.05	3.65	10.62	11.30
J. G. Davis, Rochester, N. Y.							
C. A. Ketchum & Co.	Salem	18.21	14.00	5.45	3.00	8.90	12.00
Dominion Flour Mills, Montreal, Canada.							
John Shea	Lawrence	16.11	15.00	5.28	4.75	9.15	11.00
Eagle Roller Mill Co., New Ulm, Minn.							
Bryant & Soule	Middleboro	16.11	15.62	5.16	3.77	10.32	12.24
B. A. Eckhart Milling Co., Chicago, Ill.							
* G. W. King	Charlton	15.99	14.00	4.69	3.00	8.66	11.00
Ewart & Lake, Groveland, N. Y.							
* C. F. Pease	Chester	17.93	15.00	5.32	3.50	10.51	10.00
Federal Milling Co., Lockport, N. Y.							
Lucky, Geo. R. Doane	No. Brookfield	16.73	17.00	5.40	5.00	9.75	9.00
Hecker-Jones-Jewell Milling Co., Buffalo, N. Y.							
Eastern Grain Co.	Bridgewater	16.38	15.00	4.89	4.50	8.86	9.50
J. O. Ellison & Co.	Haverhill	16.90	15.00	5.47	4.50	9.19	9.50
J. A. Hinds & Co., Rochester, N. Y.							
C. W. Bowker & Co.	Worcester,	15.24	14.50	5.61	4.20	9.31	11.30
Kehlor Flour Mills Co., St. Louis, Mo.							
Palace, Howe Bros.	Gardner	18.27	14.00	3.97	3.50	8.36	10.00
Palace, E. A. Kellogg & Sons	Feeding Hills	17.43	14.00	4.38	3.50	9.64	10.00
Lake of the Woods Milling Co., Ltd., Keewatin, Canada.							
Weld & Beck	Southbridge	15.33	15.50	5.00	4.00	10.30	9.00
Lawrenceburg Roller Mills Co., Lawrenceburg ,Ind.							
Snow Flake, Prosper Foisy	New Bedford	15.76	14.20	3.95	3.80	8.34	9.50
Maney Milling Co., Omaha, Neb.							
Eastern Grain Co.	Bridgewater	14.05	14.00	4.18	4.00	10.51	11.00
Maple Leaf Milling Co., Kenora, Ontario.							
Canadian, A. T. Knight & Co.	Hudson	16.29	15.50	3.81	4.00	10.07	9.00
Canadian, Mackenzie & Winslow, Inc.	New Bedford,	15.06	15.50	4.91	4.00	9.60	9.00
Melrose Milling Co., Melrose, Minn.							
Mackenzie & Winslow, Inc.	Fall River	17.08	14.00	4.81	3.00	9.69	11.00
New England Flour Co., Boston, Mass.							
Powerful, J. Burkhardt	Beverly	16.55	14.00	5.69	4.00	9.74	12.00
Powerful, H. Bullukian	Franklin	15.85	14.00	4.72	3.00	8.83	12.00
Niagara Falls Milling Co., Niagara Falls, N. Y.							
Hingham Grain Mill, Inc.	Hingham	16.29	14.00	5.47	3.00	9.37	12.00
Cutler Grain & Coal Co.	Palmer	16.29	14.00	5.35	3.00	9.52	12.00

*With ground screenings not to exceed mill run.

WHEAT BRAN.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
Pillsburys Flour Mills Co., Minneapolis, Minn.							
* .... Bryant & Soule	Middleboro......	16.11	14.50	4.62	4.00	9.90	12.00
* .... Bryant & Soule	Middleboro......	15.50	14.50	4.92	4.00	10.31	11.00
Geo. Plant Milling Co., St. Louis, Mo.							
* .... W. J. Meek	Fall River.......	17.43	15.00	4.52	3.00	9.40	11.00
* .... F. W. Dorr Co., ...	Newton.........	17.51	16.00	4.14	3.00	9.38	11.00
The Quaker Oats Co., Chicago, Ill.							
Bell Cow,...... C. H. Symmes	Winchester......	16.46	14.50	5.56	5.50	8.28	7.60
Red River Milling Co., Fergus Falls, Minn.							
Mackenzie & Winslow, Inc.	Fall River.......	17.60	14.60	5.08	4.10	7.86	9.90
Royal Milling Co., Great Falls, Mont.							
*Royal,........ W. G. Horton	Ipswich.........	16.90	15.50	4.72	3.00	7.72	9.00
Rugby Milling Co., Rugby, No. Dakota.							
G. C. Turner	Chester.........	17.10	15.00	4.76	4.60	10.55	10.20
Rush City Milling Co., Rush City, Minn.							
A. H. Wood & Co.	Framingham.....	16.90	15.00	4.63	4.00	10.01	10.00
Sleepy Eye Flour Mills Co., Minneapolis, Minn.							
G. M. Foster	Lowell..........	17.08	15.30	5.13	4.40	10.41	13.30
G. M. Foster	Lowell..........	16.99	15.30	5.09	4.40	10.30	13.30
Stanard-Tilton Milling Co., St. Louis, Mo.							
* .... Mackenzie & Winslow, Inc.	New Bedford....	18.13	14.50	4.58	4.00	7.88	9.50
David Stott, Detroit, Mich.							
Geo. F. Wetherbee Co	Gardner.........	16.64	16.00	4.93	4.00	8.27	10.00
Stotts.......... H. P. Howland	Spencer.........	17.25	16.00	5.23	4.00	8.83	10.00
Thompson Milling Co., Lockport, N. Y.							
Angelus,........ N. Paquin & Sons	Fall River.......	15.76	15.00	5.15	4.00	9.75	10.00
Angelus,........ P. W. Eaton & Co.	Williamstown....	15.50	15.00	4.92	4.00	9.33	10.00
Victor Milling Co., Victor, N. Y.							
M. H. Rolfe Est	Newburyport....	16.29	14.60	5.33	4.00	10.15	15.00
Washburn-Crosby Co., Minneapolis, Minn.							
J. B. Higgins	Chicopee........	16.64	14.50	4.77	4.00	10.35	11.00
Morse Bros.	Southbridge.....	16.11	14.50	5.74	4.00	10.44	11.00
Western Canada Flour Mills Co., Toronto, Can.							
* .... E. C. Packard	Brockton........	17.86	15.50	5.07	4.00	7.98	9.00
* .... I. Morton & Co	Plymouth.......	16.11	16.82	4.65	5.50	9.45	10.00
* .... A. Milot & Sons	Taunton........	17.60	16.82	5.01	5.50	8.55	10.88
Western Flour Mill Co., Davenport, Iowa.							
Black Hawk.... G. A. Fair	Holliston........	17.16	14.60	5.07	4.75	7.83	11.00
Average		16.47	—	4.95	—	9.48	—

RYE FEEDS.

Definition. Rye feeds are by-products obtained in the manufacture of flour from rye.

Boutwell Milling & Grain Co., Troy, N. Y.							
* .... Prentiss, Brooks & Co.	Easthampton....	17.43	13.50	3.27	3.00	4.36	6.00
* .... Prentiss, Brooks & Co.	Westfield	17.25	13.50	3.28	3.00	4.21	6.00

*With ground screenings not to exceed mill run.

WHEAT FEEDS WITH ADMIXTURES.

Definition. Wheat Feeds with admixtures are wheat products to which has been added material derived from some other source than wheat.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
Indiana Milling Co., Terre Haute, Ind.								
Holstein,.......Mackenzie & Winslow......	Fall River.......	12.69	12.00	3.71	3.00	18.33	16.00	Wheat bran, corn cob meal.
Holstein,.......Mackenzie & Winslow......	Fall River.......	11.73	12.00	3.57	3.00	17.42	16.00	
Sterling,........W. J. Meek...............	Fall River.......	10.94	9.80	3.68	2.75	15.83	16.00	Wheat bran, corn, corncob meal.
Sterling,........Plummer-Jennings Gr. Co. .	New Bedford....	11.12	9.80	3.04	2.75	13.30	16.00	
Sterling,........C. H. Spring Co...........	Newton Lr. Falls	11.12	9.80	3.06	2.75	17.10	16.00	
Chas. A. Krause Milling Co., Milwaukee, Wis.								
Badger Fancy Middlings,. . W. G. Horton....	Ipswich.........	11.03	12.00	5.14	4.50	2.43	7.00	Corn flour, wheat middlings with ground screenings not exceeding mill run.
Quaker Oats Co., Chicago, Ill.								
Buckeye,.......J. B. Higgins..............	Chicopee........	17.16	15.50	5.08	4.50	7.23	8.50	Wheat mixed feed, rye shorts.
Buckeye,.......Bowen & Fuller............	Leominster......	18.74	15.50	4.56	4.50	7.59	8.50	
Buckeye,.......C. B. Sawin & Son.........	Southboro.......	17.95	15.50	5.25	4.50	8.33	8.50	
Buckeye,.......Stanley-Wood Grain Co.....	Taunton........	17.43	15.50	4.79	4.50	7.74	8.50	
J. E. Soper Co., Boston, Mass.								
Kennebec,......Mackenzie & Winslow......	Fall River.......	11.47	9.80	3.07	2.75	17.33	16.00	Wheat bran, corn, corn cob meal.
Kennebec,......Mackenzie & Winslow......	Fall River.......	10.24	10.00	3.20	3.00	11.02	14.00	
A. Waller & Co., Henderson, Ky.								
Blue Grass,.....J. Burkhardt..............	Beverly.........	10.86	9.00	3.13	2.00	15.00	17.00	Wheat bran and middlings, ground corn and cob.
Blue Grass,.....H. K. Webster Co..........	Lawrence........	10.86	9.00	2.68	2.00	15.37	17.00	
Blue Grass,.....Glen Mills Cereal Co.......	Rowley.........	11.38	9.00	2.58	2.00	15.74	17.00	

DAIRY AND HORSE FEEDS.—(Containing More than 15% protein.)

J. Bibby & Sons, Liverpool, Eng.								
Oilcake Dairy,. . John F. Shine............	Dedham........	19.09	18.00	7.33	6.00	10.14	11.00	Cottonseed cake, wheat middlings, corn peanut cake, rice polish, molasses, soya bean cake, locust beans, salt, fenugreek.
Oilcake Dairy,. . J. Loring & Co............	Watertown......	21.80	18.00	6.56	6.00	10.00	11.00	
Oilcake Dairy,. . J. Loring & Co............	Watertown......	21.89	18.00	6.45	6.00	10.48	11.00	
Oilcake Horse,. . J. Loring & Co............	Watertown......	20.14	18.00	6.64	6.00	10.47	11.00	Cottonseed cake, wheat middlings, corn, peanut cake, rice polish, molasses, soya bean cake, locust beans, salt, fenugreek.
Oilcake Horse,. . J. Loring & Co............	Watertown......	20.31	18.00	5.33	6.00	9.88	11.00	

DAIRY AND HORSE FEEDS—(Containing more than 15% protein)—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
Buffalo Cereal Co., Buffalo, N. Y.								
Creamery,......A. M. Butler	Avon	20.98	18.00	4.92	4.00	9.29	9.00	Corn, wheat bran and middlings, hominy feed, gluten feed, cottonseed meal, oat feed.
Creamery,......J. H. Nye	Brockton	18.48	18.00	5.56	4.00	10.18	8.00	
Creamery,......Griffin Bros.	Fall River	19.53	18.00	5.33	4.00	9.33	8.00	
Creamery,......Griffin Bros.	Fall River	19.57	18.00	5.07	4.00	8.90	9.00	
Creamery,......The Albert Culver Co.	Rockland	20.49	18.00	5.59	4.00	8.83	9.00	
Creamery,......The Albert Culver Co.	Rockland	19.18	18.00	4.85	4.00	9.15	8.00	
Chapin & Co., Hammond, Ind.								
Unicorn Dairy, W. N. Potter's Sons & Co.	Hadley	27.67	26.00	5.23	5.50	9.30	10.00	Corn distillers grains, cottonseed meal, linseed meal, hominy meal, malt sprouts, gluten feed, barley feed, brewers' grains, wheat bran.
Unicorn Dairy, H. K. Webster Co.	Lawrence	26.97	26.00	5.98	5.50	10.82	10.00	
Unicorn Dairy, W. N. Potter Grain Co.	Princeton	26.01	26.00	5.29	5.50	10.49	10.00	
Unicorn Dairy, W. N. Potter Grain Co.	Princeton	28.19	26.00	6.16	5.50	9.72	10.00	
Unicorn Dairy, C. B. Sawin & Son	Southboro	28.37	26.00	6.44	5.50	10.20	10.00	
Unicorn Dairy, W. N. Potter & Sons	Springfield	26.53	26.00	4.70	5.50	10.44	10.00	
Unicorn Dairy, The Cutler Co.	W. Brookfield	27.32	26.00	5.17	5.50	11.72	10.00	
Unicorn Dairy, A. N. Whittemore & Co.	Worcester	27.32	26.00	5.83	5.50	10.31	10.00	
Chas. M. Cox Co., Boston, Mass.								
Wirthmore,.....Eastern Grain Co.	Bridgewater	26.18	25.50	4.72	5.20	9.36	9.50	Cottonseed meal, linseed meal, gluten feed, corn distillers' grains, wheat bran, malt sprouts, hominy meal, salt.
Wirthmore,.....E. S. Puffer	No. Amherst	25.70	25.50	4.91	5.20	9.27	9.50	
Wirthmore,.....A. Culver Son	Rockland	27.49	25.50	5.90	5.20	8.94	9.50	
Wirthmore,.....Warner Bros.	Sunderland	26.75	25.50	5.34	5.20	8.89	9.50	
Wirthmore,.....P. W. Eaton & Co.	Williamstown	25.83	25.50	5.62	5.20	8.75	9.50	
E. Crosby & Co., Brattleboro, Vt.								
Crosby's Ready, A. F. Sanctuary	Amherst	24.71	25.00	5.87	7.00	10.18	9.00	Distillers' grains, cottonseed meal, linseed meal, malt sprouts, wheat bran, wheat middlings, hominy feed, salt.
H. O. Co., Buffalo, N. Y.								
Algrane Milk,...Lenox Coal Co.	Lenoxdale	17.91	14.00	4.27	4.00	9.74	9.00	Oat hulls, wheat middlings, gluten feed corn, cotton seed meal, oats, oat shorts, salt.

DAIRY AND HORSE FEEDS—(Containing more than 15% protein.)—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
Larrowe Milling Co., Detroit, Mich.								
Larro, . . . Attleboro Grain Co.	Attleboro	21.28	19.00	3.78	3.00	10.28	14.00	Cottonseed meal, gluten feed, distillers' dried grains, dried beet pulp, wheat bran, wheat middlings, salt.
Larro, . . . G. C. Turner	Chester	19.72	19.00	3.44	3.00	14.22	14.00	
Larro, . . . F. H. Whitaker,	E. Longmeadow	21.36	19.00	4.25	3.00	11.38	14.00	
Larro, . . . Robinson & Jones Co.	Natick	20.23	19.00	3.31	3.00	11.09	14.00	
Larro, . . . Guay Bros.	New Bedford	20.14	19.00	3.77	3.00	10.53	14.00	
Larro, . . . Guay Bros.	New Bedford	19.44	19.00	3.45	3.00	12.45	14.00	
Larro, . . . Knight Grain Co.	Newburyport	21.80	19.00	3.51	3.00	10.95	14.00	
Larro, . . . H. P. Howland	Spencer	19.61	19.00	3.07	3.00	12.38	14.00	
Larro, . . . J. B. Garland & Son	Worcester	21.01	19.00	3.56	3.00	12.13	14.00	
Ropes Bros., Salem, Mass.								
Ropes Horse, . . . Ropes Bros.	Danvers	16.29	13.00	4.76	5.00	8.50	9.50	Crushed oats, hominy meal, linseed meal, wheat mixed feed, gluten feed, alfalfa meal.
Ropes Horse, . . . Ropes Bros.	Salem	15.68	13.00	6.09	5.00	9.10	9.50	
Ubiko Milling Co., Cincinnati, Ohio.								
Union Grains, . . . W. E. Bryant & Co.	Brockton	24.96	24.00	5.94	7.00	9.32	9.00	Cottonseed meal, wheat middlings, wheat bran, hominy meal, barley, malt sprouts, linseed meal, salt.
Union Grains, . . . F. F. Woodward Co.	Fitchburg	24.17	24.00	6.37	7.00	9.20	9.00	
Union Grains, . . . Haverhill Milling Co.	Haverhill	23.73	24.00	5.78	7.00	9.35	9.00	
Union Grains, . . . Lenox Coal Co.	Lenoxdale	23.47	24.00	7.05	7.00	8.96	9.00	
Union Grains, . . . Bryant & Soule	Middleboro	23.99	24.00	6.54	7.00	7.96	9.00	
Union Grains, . . . Taunton Grain Co.	Taunton	24.26	24.00	5.88	7.00	8.85	9.00	
Union Grains, . . . The Cutler Co.	W. Brookfield	23.99	24.00	6.33	7.00	8.50	9.00	
Union Grains, . . . The Cutler Co.	W. Brookfield	25.62	24.00	6.31	7.00	9.51	9.00	
Union Grains, . . . C. R. Conant	Whitman	24.87	24.00	6.60	7.00	9.13	9.00	
Union Grains, . . . Whitman Grain & Coal Co.	Whitman	25.83	24.00	6.17	7.00	8.50	9.00	
Union Grains, . . . A. N. Whittemore & Co.	Worcester	25.04	24.00	6.03	7.00	8.68	9.00	
A. H. Wood & Co., Framingham, Mass.								
Wood's Dairy Blend A. H. Wood & Co.	Framingham	21.54	20.00	6.33	4.00	10.10	12.00	Corn meal, ground oats, wheat bran and middlings, alfalfa meal, gluten feed, cottonseed meal, linseed meal, dried beet pulp, salt.
Wood's Dairy Blend A. H. Wood & Co.	Framingham	22.68	20.00	5.54	4.00	9.17	12.00	

MOLASSES FEEDS.—(Containing more than 15% protein.)

Definition. Molasses feeds are mixtures of molasses, low grade milling offal and high grade feeding stuffs.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein. Found.	Protein. Guar.	Fat. Found.	Fat. Guar.	Fiber. Found.	Fiber. Guar.	Certified Ingredients.
		%	%	%	%	%	%	
American Milling Co., Peoria, Ill.								
Sucrene Dairy, . . Bosworth & Son	Leominster	18.17	16.50	5.56	3.50	11.68	12.00	Molasses, cottonseed meal, gluten feed, ground and bolted grain screenings, clipped oat by-product, linseed meal, salt.
Sucrene Dairy, . . Bosworth & Son	Leominster	17.22	16.50	5.14	3.50	12.62	12.00	
Sucrene Dairy, . . G. M. Foster	Lowell	18.19	16.50	5.26	3.50	12.12	12.00	
Sucrene Dairy, . . Plummer & Jennings Gr. Co.	New Bedford	17.56	16.50	5.54	3.50	12.16	12.00	
Sucrene Dairy, . . Beaver Coal & Grain Co.	Norwood	15.91	16.50	4.19	3.50	11.39	12.00	
Sucrene Dairy, . . The Albert Culver Co.	Rockland	17.92	16.50	5.56	3.50	11.77	12.00	
Sucrene Dairy, . . A. N. Whittemore & Co.	Worcester	18.17	16.50	5.46	3.50	12.29	12.00	
Cloverleaf Milling Co., Buffalo, N. Y.								
Clover Leaf Dairy, Prosper Foisy	New Bedford	16.04	16.50	3.70	3.50	12.83	12.00	Cotton seed meal, gluten feed, grain screenings, oat clippings, molasses, salt.
International Sugar Feed Co., Minneapolis, Minn.								
Climax, ... William Livingston	Lowell	15.11	12.50	5.84	4.00	13.12	12.00	Cottonseed meal, molasses, cleaned grain screenings, clipped oat by-product, salt.
Special Dairy, . Prentiss Brooks & Co.	Holyoke	15.22	15.00	5.05	4.50	12.49	12.00	Cottonseed meal, molasses, cleaned grain screenings, clipped oat by-product, salt.
Special Dairy, . E. A. Cowee Est.	Worcester	15.82	15.00	5.27	4.50	12.76	12.00	
Northwest Mills Co., Winona, Minn.								
Sugareta Dairy, Prentiss Brooks & Co.	Holyoke	17.50	16.50	3.31	3.50	12.29	14.00	Cottonseed meal, malt sprouts, grain screenings, molasses, salt.
Sugarota Dairy, H. K. Webster Co.	Lawrence	17.45	16.50	4.13	3.50	11.15	14.00	
A. Nowak & Son, Buffalo, N. Y.								
Justice Dairy, . . . A. Dodge & Sons Corp.	Beverly	20.03	18.00	4.30	4.00	8.21	9.00	Cottonseed meal, gluten feed, linseed meal, corn feed meal, malt sprouts, distillers' grains, brewers' grains, wheat middlings, clipped oat by-product, molasses, salt.
M. C. Peters Mill Co., Omaha, Neb.								
*Alfalfa Queen Dairy, Ropes Bros.	Salem	20.38	17.50	3.18	3.00	9.84	12.00	Gluten feed, cottonseed meal, corn meal, alfalfa, molasses.
*Alfalfa Queen Dairy, Ropes Bros.	Salem	20.36	17.50	3.02	3.00	8.64	12.00	
Quaker Oats Co., Chicago, Ill.								
Blue Ribbon Dairy, . . . Bedford Coal & Gr. Co.	Bedford	27.03	25.00	4.98	4.00	11.07	9.00	Hominy feed, malt sprouts, wheat bran, cottonseed meal, clipped oat by-product, molasses.
Blue Ribbon Dairy, . . . G. C. Turner	Chester	22.52	25.00	5.10	4.00	13.91	9.00	
Blue Ribbon Dairy, . . . Geo. H. Parker	Danversport	24.58	25.00	3.90	4.00	11.20	9.00	
Blue Ribbon Dairy, . . . G. F. Wetherbee Co.	Gardner	25.55	25.00	5.15	4.00	11.82	9.00	
Daisy Dairy, ... G. F. Greene Coal Co.	Campello	17.86	15.00	4.23	4.00	16.41	14.50	Molasses, malt sprouts, cottonseed meal, ground grain screenings, clipped oat by-product.
Daisy Dairy, ... G. F. Greene Coal Co.	Campello	16.03	16.00	4.83	4.50	15.21	14.50	
Daisy Dairy, ... H. J. Williams	Lowell	16.57	16.00	4.79	3.50	10.23	14.50	
Quaker Dairy, ... E. A. Kellogg & Sons	Feeding Hills	17.00	16.00	5.03	4.50	15.87	14.50	Molasses, malt sprouts, cottonseed meal, ground grain screenings, clipped oat by-product.
Quaker Dairy, ... S. B. Green & Co.	Watertown	18.13	16.00	3.78	4.50	12.54	14.50	

MOLASSES FEEDS.—(Containing more than 15% Protein.)—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
Ralston Purina Co., St. Louis, Mo.								
*Purina Dairy,. . A. E. Lawrence & Son	Ayer	21.87	16.50	3.00	3.00	13.05	15.00	Cottonseed meal, brewers' grains, corn feed meal, alfalfa, molasses, salt.
*Purina Dairy,. . Prentiss, Brooks & Co.	Easthampton	18.86	16.50	3.11	3.00	15.95	15.00	
*Purina Dairy,. . John Shea	Lawrence	21.39	16.50	3.80	3.00	9.52	15.00	
*Purina Dairy,. . Berkshire Coal & Grain Co.	North Adams	16.77	16.50	2.62	3.00	16.08	15.00	
*Purina Dairy,. . M. G. Williams	Raynham	23.79	16.50	4.76	3.00	12.10	15.00	
*Purina Dairy,. . Prentiss, Brooks & Co.	Westfield	19.31	16.50	3.24	3.00	16.52	15.00	
*Purina Dairy,. . P. W. Eaton & Co.	Williamstown	18.39	16.50	3.27	3.00	15.77	15.00	
*Purina Dairy,. . C. W. Bowker & Co.	Worcester	18.43	16.50	2.67	3.00	18.64	15.00	
Western Grain Products Co., Hammond, Ind.								
Hammond Dairy,. . . A. E. Lawrence & Son	Ayer	17.91	16.50	4.31	3.50	10.71	11.00	Cottonseed meal, corn distillers' grains, malt sprouts, clipped oat by-product, ground grain screenings, molasses, salt.
Hammond Dairy,. . . G. W. King	Charlton	16.69	16.50	4.80	3.50	10.80	11.00	
Hammond Dairy,. . . B. W. Brown	Concord	16.93	16.50	4.62	3.50	12.22	11.00	
Hammond Dairy,. . . J. Cushing & Co.	Fitchburg	18.28	16.50	4.38	3.50	10.56	11.00	
Hammond Dairy,. . . Albert Carr	Northboro	17.12	16.50	3.54	3.50	10.20	11.00	
Hammond Dairy,. . . The Albert Culver Co.	Rockland	17.45	16.50	4.40	3.50	10.88	11.00	
Hammond Dairy,. . . C. B. Sawin & Son	Southboro	17.20	16.50	3.87	3.50	9.89	11.00	
Hammond Dairy,. . . Warner Bros.	Sunderland	18.58	16.50	4.29	3.50	10.94	11.00	

*Does not conform to the definition as given for molasses feeds as no low grade milling offals are used.

CALF MEALS.

Definition. Calf meal is a proprietary mixture intended as a feed for young calves.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found.	Protein Guar.	Fat Found.	Fat Guar.	Fiber Found.	Fiber Guar.	Certified Ingredients.
J. Bibby & Sons, Liverpool, England.								
Cream Equivalent, J. Loring & Co.	Watertown	16.81	14.00	14.70	14.00	5.98	7.00	Linseed, linseed cake, tapioca meal, sago meal, rice polish, starch, locust beans, salt.
Cream Equivalent, J. Loring & Co.	Watertown	18.13	14.00	14.00	14.00	5.42	7.00	
Blatchford's Calf Meal Factory, Waukegan, Ill.								
Blatchford's,. . . . H. Bruckman	So. Lawrence	25.48	25.00	5.08	5.00	6.45	5.00	Locust bean meal, unpressed flax seed, wheat flour, ground beans and peas, linseed meal, cocoa shells, cocoanut meal, recleaned cottonseed meal, fenugreek, dried milk, salt.
Blatchford's,. . . . J. Cushing & Co.	Stoughton	27.84	24.00	4.31	5.00	6.18	6.00	
Northwest Mills Co., Winona, Minn.								
Sugarota,. . . . . . . J. B. Garland & Son	Worcester	25.48	25.00	5.53	6.00	5.91	6.00	Pulverized wheat, pulverized malt, linseed meal, cottonseed meal.
Sugarota,. . . . . . . J. B. Garland & Son	Worcester	22.86	25.00	4.89	6.00	3.90	6.00	
Ryde & Company, Chicago, Ill.								
Ryde's Cream,. . F. F. Woodward Co.	Fitchburg	24.61	25.00	4.39	5.00	4.88	6.00	Carob beans, flaxseed, wheat flour, cottonseed, beans, lentils, fenugreek, anise, cocoa meal, salt.
Ryde's Cream,. . Wilder & Wotton	Lowell	26.01	25.00	6.03	5.00	4.70	6.00	

MISCELLANEOUS PROTEIN FEEDS.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
American Hominy Co., Indianapolis, Ind.								
Homeoline, ... J. Burkhardt	Beverly	19.79	17.00	6.80	5.00	4.30	7.00	White corn oil meal.
Morrow & Co., Milwaukee, Wis.								
Oat Middlings, . . A. H. Wood & Co	Framingham	15.66	12.00	6.48	5.00	1.40	10.00	
Oil Seeds Co., New York City, N. Y.								
Beta Peanut Oil Meal, A. H. Wood & Co	Framingham	37.13	30.00	10.65	7.00	6.85	8.00	
Beta Peanut Oil Meal, A. H. Wood & Co	Framingham	36.43	30.00	11.54	7.00	7.39	8.00	
Coco Brand Cocoanut Meal, A. H. Wood & Co	Framingham	26.18	20.00	11.74	7.00	11.04	10.00	
Postum Cereal Co. Ltd., Battle Creek, Mich.								
CXX Feed, ... I. J. Rowell	Pepperell	17.86	15.00	2.49	2.00	19.01	24.00	Wheat, wheat bran and molasses.
Quaker Oats Co., Chicago, Ill.								
Barley Feed, ... J. Burkhardt	Beverly	23.56	18.00	5.27	4.50	9.68	10.00	

II. STARCHY (CARBOHYDRATE) FEEDS.

CORN MEAL.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
Ground by Retailer.							
Berkshire Coal & Grain Co.	North Adams	10.16	—	4.82	—	2.76	—
Bond Grain Co.	Charlton	10.24	—	4.63	—	2.45	—
D. H. Craig	Plymouth	9.11	—	2.73	—	1.59	—
J. Cushing & Co.	Fitchburg	8.84	—	1.36	—	1.78	—
Cutler Co.	N. Wilbraham	9.54	—	3.34	—	2.03	—
Cutler Co.	N. Wilbraham	9.28	—	2.80	—	2.30	—
Geo. R. Doane	No. Brookfield	9.54	—	3.26	—	1.80	—
Eastern Grain Co.	Bridgewater	9.98	—	1.73	—	2.49	—
Eastern Grain Co.	Bridgewater	9.28	—	3.40	—	2.60	—
P. W. Eaton & Co.	Williamstown	9.28	—	3.73	—	2.09	—
J. O. Ellison & Co.	Haverhill	9.02	—	3.70	—	1.81	—
W. K. Gilmore & Son	Wrentham	9.02	—	3.76	—	1.75	—
Cr. Corn Siftings G. F. Green Coal Co.	Campello	10.07	—	2.99	—	2.58	—
Hingham Grain Mill, Inc.	Hingham	9.02	—	4.07	—	1.15	—
Hingham Grain Mill, Inc.	Hingham	9.37	—	3.77	—	1.61	—
Mackenzie & Winslow, Inc.	Fall River	9.98	—	5.36	—	3.00	—
Mackenzie & Winslow, Inc.	Fall River	9.46	—	3.78	—	1.98	—
Morse Bros.	Southbridge	9.43	—	3.32	—	2.33	—
Bolted Meal.... E. C. Packard,	Brockton	9.54	—	4.10	—	1.10	—
Siftings........ E. C. Packard	Brockton	10.07	—	3.97	—	2.70	—
Plummer & Jennings Gr. Co.	New Bedford	8.93	—	3.31	—	1.26	—
C. P. Washburn	Middleboro	9.81	—	1.72	—	2.20	—
C. P. Washburn	Middleboro	9.02	—	3.21	—	0.34	—
H. K. Webster Co.	Lawrence	8.93	—	3.64	—	2.09	—
M. G. Williams	Raynham	9.46	—	3.98	—	2.00	—
M. G. Williams	Raynham	9.28	—	3.99	—	1.65	—
F. F. Woodward Co.	Fitchburg	8.76	—	2.46	—	1.60	—
F. F. Woodward Co.	Fitchburg	9.46	—	3.14	—	2.64	—
Amendt Milling Co., Monroe, Mich.							
Amco Feed Meal.... Albert Carr	Northboro	9.89	9.00	3.85	2.50	2.84	6.50
Amco Feed Meal.... C. L. Marsh	Webster	8.58	9.10	3.48	5.00	2.16	6.50
Amco Feed Meal.... C. L. Marsh	Webster	8.76	9.00	2.98	2.50	2.33	6.00
Buffalo Cereal Co., Buffalo, N. Y.							
Yellow B........ J. Burkhardt	Beverly	10.68	—	7.14	—	4.15	—
Mohawk........ F. H. Crane & Sons	Quincy Adams	9.19	—	3.61	—	1.01	—
Seneca.......... Griffin Bros.	Fall River	9.81	—	4.97	—	2.35	—
Butman & Cressey Co., Lynn, Mass.							
Loham Bros.	Marblehead	10.42	—	4.58	—	2.61	—
J. Cushing & Co., Fitchburg, Mass.							
C. W. & G. W. Nightingale	Quincy Adams	8.93	—	3.14	—	2.52	—
The Cutler Co., N. Wilbraham, Mass.							
Thorne Bros.	Millis	10.42	—	3.99	—	3.40	—
Smith Feed Co.	Westfield	10.16	—	3.22	—	2.14	—
Globe Elevator Co., Buffalo, N. Y.							
Fancy Yellow... G. A. Fair	Holliston	8.58	—	2.54	—	0.72	—
The Hecker Cereal Co., New York, N. Y.							
Hecker's Common Meal, W. P. Barney	Seekonk	9.89	—	4.89	—	4.08	—
The Mollett Grain & Milling Co., Toledo, Ohio,							
Stanley Wood Grain Co.	Taunton	9.89	—	5.58	—	4.17	—
Narragansett Milling Co., E. Providence, R. I.							
The Albert Culver Co.	Rockland	9.72	—	3.66	—	2.63	—
Taunton Grain Co.	Taunton	9.19	—	1.66	—	2.35	—
Taunton Grain Co.	Taunton	9.11	—	3.06	—	2.48	—
W. N. Potter & Sons, Springfield, Mass.							
C. W. Darling & Co.	Three Rivers	9.19	—	3.87	—	2.09	—
H. C. Puffer Co., Springfield, Mass.							
Wight Thayer Co.	Indian Orchard	9.81	—	2.33	—	2.50	—
Smith Northam Co., Hartford, Conn.							
A. M. Haggart & Son	Franklin	8.93	—	3.78	—	2.33	—
Average		9.47	—	3.58	—	2.22	—

GROUND OATS.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
Ground by Retailer.							
W. K. Gilmore & Sons	Wrentham	12.34	—	4.61	—	8.45	—
Mackenzie & Winslow, Inc.	Fall River	12.26	—	4.49	—	9.46	—
J. H. Nye	Brockton	11.82	—	3.73	—	7.22	—
W. N. Potter & Sons, Greenfield, Mass.							
W. N. Potter & Co	Charlemont	13.40	—	4.24	—	8.67	—
Globe Elevator Co., Buffalo, N. Y.							
G. A. Fair	Holliston	11.73	—	4.87	—	9.00	—

RYE MEAL.

Ground by Retailer.							
E. C. Packard	Brockton	11.47	—	1.85	—	1.78	—

HOMINY MEAL.

Definition. Hominy meal, feed or chop is a by-product in the manufacture of hominy grits from corn, and consists of the hull and corn germ together with a considerable portion of the corn starch.

American Hominy Co., Indianapolis, Ind.							
Homco, Howe Bros	Gardner	9.89	9.50	6.75	7.00	4.24	7.00
Homco, J. W. Dorr & Sons	Natick	10.68	9.50	7.54	7.00	4.68	7.00
Homco, Jacobson Bros	Dartmouth	10.68	9.50	6.82	7.00	4.56	7.00
M. F. Barringer, Philadelphia, Pa.							
Keystone, Potter Grain Co	Shelburne Falls	10.68	9.00	6.51	6.00	1.63	10.00
Buffalo Cereal Co., Buffalo, N. Y.							
J. H. Nye	Brockton	11.47	10.00	6.92	7.00	3.93	4.00
J. N. Waite	Easthampton	11.56	10.00	6.21	6.00	4.63	5.00
Griffin Bros	Fall River	11.64	10.00	6.28	7.00	4.55	4.00
N. Paquin & Sons	Fall River	11.03	10.00	7.43	6.00	4.22	5.00
A. H. Wood & Co	Framingham	11.82	10.00	8.88	7.00	4.62	4.00
O. H. Fiske	Huntington	11.93	10.00	6.19	7.00	4.53	4.00
Guay Bros	New Bedford	10.94	10.00	8.44	7.00	4.45	4.00
Morse Bros	Southbridge	11.38	10.00	6.86	7.00	4.56	4.00
W. K. Gilmore & Sons, Inc.	Walpole	12.17	10.00	6.24	6.00	4.05	5.00
Chas. M. Cox Co., Boston, Mass.							
Paragon, G. F. Green Coal Co	Campello	10.94	10.50	7.82	7.50	4.75	—
Wirthmore, Eastern Grain Co	Bridgewater	10.94	9.50	6.67	7.50	3.88	5.00
Wirthmore, Haverhill Milling Co	Haverhill	11.03	9.50	6.83	7.50	4.10	5.00
Wirthmore, H. J. Williams	Lowell	11.64	9.50	8.03	7.50	4.28	5.00
Wirthmore, Thorne Bros	Millis	10.77	9.50	7.85	7.50	4.16	5.00
Wirthmore, T. E. Borden	N. Westport	10.42	9.50	6.37	7.50	3.00	5.00
Wirthmore, J. B. Bridges & Co	So. Deerfield	10.86	9.50	6.14	7.50	3.59	5.00
Witrhmore, Whitman Grain & Coal Co	Whitman	11.29	9.50	8.42	7.50	3.84	5.00
Eagle Roller Mill Co., New Ulm, Minn.							
Geo. R. Doane	No. Brookfield	10.16	10.10	5.71	7.93	4.99	6.43
Evans Milling Co., Indianapolis, Ind.							
Evans, A. Dodge & Son Corp.	Beverly	11.99	10.00	8.13	7.50	5.12	7.00
Evans, H. J. Williams	Lowell	11.47	10.00	8.40	7.50	4.77	7.00
Chas. A. Krause Milling Co., Milwaukee, Wis.							
Badger, Brookfield Grain Co	Brookfield	11.60	10.00	6.30	6.00	4.87	5.00
Badger W. J. Meek	Fall River	11.47	10.00	7.98	6.00	5.48	5.00
Badger, A. M. Haggart & Son	Franklin	12.08	10.00	7.43	6.00	6.00	5.00
Badger, D. B. Hodgkins & Sons	Gloucester	12.34	10.00	6.96	6.00	5.86	5.00
Badger, M. H. Rolfe Est	Newburyport	11.47	10.00	6.74	6.00	4.19	5.00
Badger, The Cutler Co	W. Brookfield	12.52	10.00	7.45	6.00	6.03	5.00
H. E. McEachron Co., Wausau, Wis.							
Mackenzie & Winslow, Inc.	Fall River	12.61	11.25	11.30	8.50	4.05	4.00

HOMINY MEAL.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
Miner-Hillard Milling Co., Wilkes Barre, Pa.							
J. Burkhardt	Beverly	11.56	10.00	6.33	5.00	3.43	5.00
Wallace Grain Co	Clinton	11.29	10.00	5.93	5.00	3.40	5.00
C. Wyman	Hubbardston	11.82	10.00	6.70	5.00	3.39	5.00
Bowen & Fuller	Leominster	11.12	10.00	6.27	5.00	4.63	5.00
H. A. Crossman	Needham	11.38	10.00	6.18	5.00	3.71	5.00
Mackenzie & Winslow, Inc.	New Bedford	10.86	10.00	5.29	5.00	4.66	5.00
E. C. Frost	Shelburne Falls	11.56	10.00	5.85	5.00	3.43	5.00
A. N. Whittemore & Co.	Worcester	12.17	10.00	7.22	5.00	3.53	5.00
Mystic Milling Co., Sioux City, Iowa.							
Warren Grain Co	Warren	11.01	11.00	5.74	7.00	4.72	4.00
C. L. Marsh	Webster	10.51	11.00	6.06	7.00	4.87	4.00
National Feed Co., St. Louis, Mo.							
Prosper Foisy	New Bedford	11.38	8.50	6.74	7.00	4.53	10.00
The Patent Cereals Co., Geneva, N. Y.							
G. W. King	Charlton Depot	11.64	10.00	6.41	7.00	4.23	5.00
W. H. Garland	Gloucester	10.33	10.00	6.38	7.00	3.70	5.00
C. A. Pierce	Hinsdale	11.93	10.00	6.45	7.00	4.70	5.00
Covers Poultry Sup. Store	Lowell	11.64	10.00	5.99	7.00	3.75	5.00
C. P. Washburn	Middleboro	11.38	10.00	7.38	7.00	3.93	5.00
Cutler Co	N. Wilbraham	11.03	10.00	6.59	7.00	4.55	5.00
W. N. Potter Grain Co	Princeton	10.35	10.00	6.48	7.00	3.96	5.00
Plymouth Milling Co., Le Mars, Iowa.							
John Franks	New Bedford	11.12	10.00	7.83	6.80	3.72	8.80
The Quaker Oats Co., Chicago, Ill.							
Yellow, J. Burkhardt	Beverly	10.33	9.00	3.20	4.00	2.54	4.00
Yellow, Mackenzie & Winslow, Inc.	Fall River	9.81	9.00	5.95	4.00	2.68	4.00
Yellow, Peterson Coal & Grain Co.	Gt. Barrington	11.21	9.00	7.46	4.00	3.93	4.00
Yellow, H. P. Howland	Spencer	11.03	9.00	8.91	4.00	3.69	4.00
J. E. Soper Co., Boston, Mass.							
Blue Ribbon, E. C. Packard	Brockton	11.38	10.00	6.35	7.00	4.19	5.00
Blue Ribbon, W. H. Garland	Gloucester	10.94	10.00	6.73	7.00	3.94	5.00
Blue Ribbon, W. H. Garland	Gloucester	10.86	10.00	7.12	7.00	4.55	5.00
Blue Ribbon, G. M. Foster	Lowell	10.94	10.00	6.30	7.00	3.95	5.00
Blue Ribbon, A. N. Whittemore & Co.	Worcester	11.56	10.00	6.77	7.00	4.29	5.00
Sparr Cereal Co., Marshfield, Wis.							
A. Dodge & Sons, Corp	Beverly	11.12	10.00	8.18	9.00	4.44	7.00
Suffern, Hunt & Co., Decatur, Ill.							
Acme, Mackenzie & Winslow, Inc.	Fall River	11.29	9.30	8.76	7.10	4.81	10.00
Acme, W. J. Meek	Fall River	11.29	9.30	8.09	7.10	4.56	10.00
Average		11.27	—	6.96	—	4.23	—

PROVENDER.

Definition. Provender is a mixture of whole corn and whole oats ground together.

Ground by Retailer.							
Geo .R. Doane	No. Brookfield	10.51	—	3.58	—	3.00	—
F. A. Fales & Co	Norwood	11.12	15.00	3.97	4.00	5.07	8.00
F. A. Fales & Co	Norwood	10.24	—	3.74	—	4.29	—
W. K. Gilmore & Sons	Wrentham	11.91	—	4.02	—	3.71	—
E. C. Packard	Brockton	10.73	—	3.13	—	4.99	—
Plummer & Jennings Gr. Co.	New Bedford	11.38	—	4.90	—	5.69	—
W. H. Smith	Northampton	11.47	—	4.44	—	4.38	—
M. G. Williams	Raynham	10.59	—	4.60	—	4.63	—
M. G. Williams	Raynham	9.89	—	3.95	—	4.44	—

PROVENDER—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Fund.	Guar.	Found	Guar.
		%	%	%	%	%	%
Buffalo Cereal Co., Buffalo, N. Y.							
H. L. Patrick	Hopedale	11.99	9.00	5.35	4.00	4.58	4.00
Lenox Coal Co.	Lenoxdale	10.94	9.00	4.93	4.00	5.11	4.00
E. A. Cowee Est., Worcester, Mass.							
No. 1 . . . . I. J. Rowell	Pepperell	10.98	9.00	3.75	3.00	4.09	11.00
Cutler Co., No. Wilbraham, Mass.							
Smith Feed Co.	Westfield	10.51	—	3.16	—	3.02	—
Imperial Grain & Milling Co., Toledo, Ohio.							
Imperial . . . . Rollstone Grain Co.	Fitchburg	10.82	9.50	3.93	4.00	4.62	4.00
Imperial . . . . F. F. Woodward Co.	Fitchburg	10.51	9.50	5.06	4.00	4.12	4.00
Imperial . . . . F. H. Crane	Quincy Adams	10.16	9.50	4.31	4.00	3.15	4.00
Imperial . . . . F. H. Crane	Quincy Adams	10.07	9.50	3.96	4.00	3.00	4.00
Imperial . . . . C. A. Ketchum & Co.	Salem	10.94	9.50	3.90	4.00	3.18	4.00
Imperial . . . . S. B. Green	Watertown	10.33	9.50	3.99	4.00	2.74	4.00
Imperial . . . . C. W. Bowker & Co.	Worcester	10.24	9.50	3.84	4.00	2.48	4.00
Narragansett Milling Co., E. Providence, R. I.							
H. E. Thompson	Plainville	10.86	9.50	4.27	3.50	5.54	—
Taunton Grain Co.	Taunton	9.81	9.50	3.80	3.50	3.98	—
Pratt & Co., Buffalo, N. Y.							
J. Loring & Co.	Waltham	9.98	9.00	3.60	4.00	3.82	6.00
H. C. Puffer Co., Springfield, Mass.							
H. C. Puffer Co.	Huntington	10.33	8.50	4.50	3.00	4.38	—
Smith, Northam & Co., Inc., Hartford, Conn.							
A. M. Haggart & Son	Franklin	10.07	8.00	4.17	4.00	3.93	—
A. M. Haggart & Son	Franklin	9.89	9.00	4.09	4.00	3.81	—
Stratton & Co., Concord, N. H.							
F. O. Andrews	Pepperell	11.56	—	2.98	—	5.60	—

DRIED BEET PULP.

Definition. Dried beet pulp is the dried sugar beet residue obtained in the manufacture of beet sugar.

Larrowe Milling Co., Detroit ,Mich.							
Bedford Coal & Grain Co.	Bedford	10.89	8.00	0.38	0.50	21.42	20.00
Bedford Coal & Grain Co.	Bedford	9.19	8.00	0.47	0.50	17.38	20.00
Joseph Allen	Brimfield	9.11	8.00	0.69	0.50	19.55	20.00
Mackenzie & Winslow	Fall River	9.02	8.00	0.57	0.50	18.93	20.00
W. N. Potter Grain Co.	Princeton	9.63	8.00	0.72	0.50	19.22	20.00
C. B. Sawin & Son	Southboro	9.11	8.00	0.56	0.50	19.19	20.00
C. W. Darling & Co.	Three Rivers	8.10	8.00	0.55	0.50	19.06	20.00
J. B. Garland & Son	Worcester	8.58	8.00	1.07	0.50	17.74	20.00
Chas. Pope, Chicago, Ill.							
A. Dodge & Sons Corp.	Beverly	9.63	8.00	1.38	0.50	18.78	20.00

STOCK AND HORSE FEEDS.—(Containing less than 12% protein.)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
Amendt Milling Co., Monroe, Mich.								
Amco-Chop, C. L. Marsh	Webster	11.47	7.87	3.72	3.92	11.04	10.95	Corn feed meal, corn screenings, wheat screenings, oat screenings, oat clippings, gluten feed, salt.
Amco-Chop, C. L. Marsh	Webster	11.12	7.87	3.41	3.92	5.42	10.95	
Amco-Chop, Worcester Hay & Grain Co.	W. Brookfield	10.59	7.87	4.12	3.92	6.93	10.95	
Buffalo Cereal Co., Buffalo, N. Y.								
Chop, J. Burkhardt	Beverly	9.46	7.00	4.86	3.00	9.29	9.00	Ground corn, hominy feed, oat shorts, oat hulls.
Chop, A. M. Haggart & Son	Franklin	11.21	7.00	5.28	3.00	8.78	9.00	
Horse, A. M. Butler	Avon	11.52	10.00	4.18	4.00	8.50	9.00	Ground oats, corn and barley, wheat middlings, hominy feed, oat shorts, middlings,and hulls, gluten feed, linseed meal.
Horse, Griffin Bros.	Fall River	10.94	10.00	5.32	4.00	7.35	9.00	
Horse, Griffin Bros.	Fall River	10.77	10.00	4.78	4.00	9.15	9.00	
Iroquois, Plummer & Jennings Gr. Co.	New Bedford	9.54	7.00	4.10	3.00	9.50	9.00	Ground corn, hominy feed, oat shorts & hulls.
Steam Cooked, A. M. Butler	Avon	10.24	8.00	4.43	4.00	5.93	9.00	Ground corn and oats, hominy feed, oat shorts, hulls, middlings.
Steam Cooked, Griffin Bros.	Fall River	10.33	8.00	5.40	4.00	6.50	9.00	
Steam Cooked, H. L. Patrick	Hopedale	9.63	8.00	4.52	4.00	6.50	9.00	
Steam Cooked, E. E. Tarbell	Pepperell	9.98	8.00	4.77	4.00	7.34	8.00	
Steam Cooked, A. Culver Co.	Rockland	10.07	8.00	7.51	4.00	7.68	8.00	
Stock, J. H. Nye	Brockton	9.72	8.00	4.60	4.00	9.30	9.00	Ground corn and oats, wheat middlings, hominy feed, oat shorts, hulls and middlings.
Stock, Griffin Bros.	Fall River	9.89	8.00	6.67	4.00	8.55	9.00	
Stock, Morse Bros.	Southbridge	8.84	8.00	5.21	4.00	9.77	9.00	
The Chesbro Milling Co., Salamanca, N. Y.								
Chesbro, J. B. Bridges & Co.	So. Deerfield	10.77	9.00	6.22	3.25	6.55	9.00	Corn, barley, cottonseed meal, red dog flour, oat shorts and hulls, salt.
Chas. M. Cox Co., Boston, Mass.								
Charlstock, E. & A. M. Fullerton	Brockton	8.67	6.00	3.45	3.00	11.09	10.50	Corn, oat feed, hominy feed.
Charlstock, C. T. Wyman	Hubbardston	7.73	6.00	3.04	3.00	13.26	10.50	
Wirthmore, Scott Grain Co.	Amesbury	9.28	9.00	5.06	4.00	6.57	7.00	Hominy feed, oat feed.
Wirthmore, J. H. Nye	Brockton	9.98	9.00	5.85	4.00	8.13	7.00	
Wirthmore, C. H. Smith	Dighton	9.02	9.00	5.03	4.00	10.16	7.00	
Wirthmore, A. H. Wood & Co.	Framingham	10.42	9.00	6.64	4.00	8.86	7.00	
Wirthmore, Prentiss, Brooks & Co.	Holyoke	9.81	9.00	6.70	4.00	7.60	7.00	
Wirthmore, J. Morton & Co.	Plymouth	11.03	9.00	5.37	4.00	9.07	7.00	
Wirthmore, J. Morton & Co.	Plymouth	10.07	9.00	6.92	4.00	9.32	7.00	
Wirthmore. Warner Bros,	Sunderland	10.55	9.00	6.79	4.00	9.40	7.00	

STOCK AND HORSE FEEDS—(Containing less than 12% protein)—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
J. Cushing & Co., Hudson, Mass.								
Hudson,........J. Cushing & Co.	Hudson	9.81	9.00	6.57	4.00	9.00	7.00	Corn, oats, barley, hominy feed, oat feed.
Hudson,........J. Cushing & Co.	Hudson	9.54	9.00	6.23	4.00	9.93	7.00	
Empire Mills, Olean, N. Y.								
Empire,........Guay Bros.	New Bedford	10.16	7.50	4.24	3.00	5.64	9.00	Corn, hominy feed, oat hulls.
J. B. Garland & Son, Worcester, Mass.								
Red Tag A Chop,...Bond Grain Co.	Charlton	9.11	7.00	3.07	3.00	10.98	14.00	Corn, wheat middlings, barley, oat feed, grain screenings.
Red Tag A Chop,...G. W. King	Charlton	10.07	7.00	4.26	3.00	12.34	14.00	
Red Tag A Chop,...J. B. Garland & Son	Worcester	9.89	7.00	4.22	3.00	13.00	14.00	
Red Tag A Chop,...Morse Bros.	Southbridge	10.77	7.00	4.26	3.00	12.98	14.00	
Red Tag B Chop,...J. B. Garland & Son	Worcester	9.02	7.00	4.14	3.00	14.48	16.00	Corn, wheat middlings, oat feed, grain screenings.
Globe Elevator Co., Buffalo, N. Y.								
No. 1 Chop,....A. M. Haggart & Son	Franklin	9.46	7.00	2.61	3.00	8.70	9.00	Corn, oats, oat hulls, flour middlings, salt.
D. H. Grandin Milling Co., Jamestown, N. Y.								
Grandin's,......H. K. Webster Co.	Lawrence	10.54	8.50	6.48	3.50	8.20	9.00	Corn, oats, barley, barley middlings, oat hulls, hominy feed, salt.
Grandin's,......Plummer & Jennings Gr. Co.	New Bedford	9.72	8.50	5.69	3.50	9.20	9.00	
Grandin's,......A. N. Whittemore & Co.	Worcester	10.59	8.50	6.85	3.50	8.09	9.00	
W. H. Haskell & Co., Toledo, Ohio.								
Haskell's,.......Rollstone Grain Co.	Fitchburg	10.42	8.00	6.97	4.00	8.96	8.00	Corn, oats, hominy feed, oat feed, salt.
Haskell's,.......W. L. Palmer	Medway	10.07	8.00	6.99	4.00	8.33	8.00	
Haskell's,.......A. Milot & Son	Taunton	10.42	8.00	7.22	4.00	8.73	8.00	
Wm. S. Hills Co., Boston, Mass.								
Purity,.........H. J. Williams	Lowell	8.67	9.00	5.26	3.25	12.71	9.00	Barley, hominy feed, oat feed, wheat middlings, salt.
Purity,.........F. Diante	Randolph	10.94	8.00	6.12	3.25	10.30	9.00	
Purity,.........C. R. Conant	Whitman	12.26	9.00	5.63	3.25	11.64	9.00	
H. O. Company, Buffalo, N. Y.								
Algrane Horse,......G. F. Greene	Campello	12.26	11.00	3.58	4.00	9.96	9.00	Oats, oat feed, gluten feed, wheat middlings, corn, hominy feed, salt.
Algrane Horse,......The J. O. Ellison & Co.	Haverhill	11.82	11.00	4.45	4.00	8.79	10.00	
New Eng. Stock,....A. T. Butler	Adams	11.17	9.00	5.29	4.00	8.79	9.00	Corn, oats, oat feed, hominy feed, wheat middlings, salt.
New Eng. Stock,....Albert Carr	Northboro	10.07	9.00	5.27	4.00	9.31	9.00	
New Eng. Stock,....Beaver Coal & Gr. Co.	Norwood	10.94	9.00	5.23	4.00	8.61	10.00	
New Eng. Stock,....Jaquith & Co.	Woburn	10.33	9.00	4.80	4.00	10.23	10.00	

STOCK AND HORSE FEEDS.—(Containing less than 12% Protein.)—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
Chas. A. Krause Milling Co., Milwaukee, Wis.								
Badger Stock, W. G. Horton	Ipswich	11.47	11.00	6.47	5.00	5.31	7.00	Corn oil meal, corn flour, hominy feed, crushed oats.
D. L. Marshall Co., Boston, Mass.								
Uniform Stock, A. N. Whittemore & Co.	Worcester	9.37	7.50	3.67	3.00	6.55	9.00	Corn, hominy, oat hulls.
Meech & Stoddard, Inc., Middletown, Conn.								
M. & S. Stock, Jacobson Bros.	No. Dartmouth	9.89	9.00	5.48	3.00	7.80	12.00	Oat hulls, hominy feed.
M. & S. Stock, Weld & Beck	Southbridge	8.76	9.00	6.68	3.00	9.63	12.00	
M. & S. Stock, Weld & Beck	Southbridge	10.51	9.00	8.00	3.00	7.93	12.00	
M. & S. Stock, W. F. Little	Worcester	7.97	9.00	5.47	3.00	14.83	12.00	
The Park & Pollard Co., Boston, Mass.								
Stock, D. H. Craig	Plymouth	10.77	9.00	2.96	3.00	10.11	12.00	Wheat bran, wheat middlings, corn, barley, oats, gluten feed, cottonseed meal, beet pulp, oat hulls, hominy feed, linseed meal, salt.
W. N. Potter & Sons. Springfield, Mass.								
Special Provender, Potter Bros. & Co.	N. Adams	10.86	8.75	2.12	3.50	11.51	8.00	Corn, oats, oat hulls.
Special Provender, C. L. Marsh	Webster	10.16	8.75	3.07	3.50	6.54	8.00	
The Quaker Oats Co., Chicago, Ill.								
Boss, G. F. Wetherbee Co.	Gardner	8.23	8.00	3.39	3.00	10.07	12.00	Corn, hominy feed, oat feed salt.
Boss, G. F. Wetherbee Co.	Gardner	8.78	8.00	3.10	3.00	8.63	12.00	
Schumacher Stock, E. & A. M. Fullerton	Brockton	11.38	10.00	5.00	3.25	10.10	10.00	Corn, barley feed, hominy feed, wheat middlings, cottonseed meal, oat feed, ground puffed rice, ground puffed wheat, salt.
Schumacher Stock, M. G. Williams	Raynham	10.86	10.00	3.33	3.25	11.71	10.00	
Schumacher Stock, C. O. Parmenter & Co.	S. Sudbury	11.99	10.00	3.32	3.25	9.94	10.00	
Schu. Special Horse, Wallace Grain Co.	Clinton	10.24	9.25	3.43	3.25	6.37	8.00	Corn, oats, oat feed, salt.
Schu. Special Horse, Wallace Grain Co.	Clinton	10.07	9.25	3.70	3.25	6.09	8.00	
Schu. Special Horse, E. W. Brayman	Lee	8.89	9.25	3.97	3.25	7.26	8.00	
Schu. Special Horse, Mansfield Milling Co.	Mansfield	9.63	9.25	3.10	3.25	6.81	8.00	
Sterling, G. F. Wetherbee Co.	Gardner	11.29	10.00	4.76	3.50	10.53	10.00	Corn, barley, hominy feed, wheat middlings, cottonseed meal, oat feed, ground puffed rice, ground puffed wheat, salt.
Sterling, G. F. Wetherbee Co.	Gardner	9.98	10.00	4.13	3.50	10.29	10.00	
Sterling, Berkshire Coal & Gr. Co.	N. Adams	12.34	10.00	5.33	3.50	11.53	10.00	
David Stott, Detroit, Mich.								
Winner Chop, C. B. Sampson	Holyoke	10.55	9.00	6.50	5.00	4.18	10.00	Corn meal, oats, ground wheat screenings, oat hulls, salt.

STOCK AND HORSE FEEDS—(Containing less than 12% protein) *(Continued)*

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
H. K. Webster, Lawrence, Mass.								
Webster's Stock,....H. K. Webster	Lawrence	10.42	8.00	5.22	4.00	8.80	9.00	Corn, hominy feed, oat feed, gluten feed.
Webster's Stock,....H. K. Webster	Lawrence	9.02	8.00	3.32	4.00	8.98	9.00	
F. F. Woodward Co., Fitchburg, Mass.								
Very Best Stock,....F. F. Woodward Co.	Fitchburg	10.24	9.00	7.33	4.00	7.00	7.00	Barley, oats, hominy meal, corn, oat feed.
Very Best Stock,....A. T. Knight & Co.	Hudson	10.07	9.00	5.86	4.00	8.69	7.00	
Very Best Stock,....Guay Bros	New Bedford	9.37	9.00	6.17	4.00	9.69	7.00	
Very Best Stock,....H. G. Hill Co.	Williamsburg	10.59	9.00	6.55	4.00	9.25	7.00	

STOCK AND HORSE FEEDS.—(12 to 15% Protein.)

Buffalo Cereal Co., Buffalo, N. Y.								
Dairy,.............C. F. Pease	Chester	13.27	12.00	4.83	3.00	9.29	8.00	Corn, wheat bran and middlings, hominy feed, gluten feed, oat feed.
Dairy,.............W. T. McLaughlin Co.	W. Roxbury	13.66	12.00	4.11	3.00	9.37	8.00	
Green River Grain Co., Greenfield, Mass.								
O. K. Horse,........W. N. Potter Sons	Springfield	14.89	12.00	5.10	4.25	7.33	8.00	Hominy feed, oats, corn, wheat bran, linseed meal.
H. O. Mills, Buffalo, N. Y.								
Algrane Horse,......J. O. Ellison & Co.	Haverhill	12.17	11.00	3.57	4.00	7.31	9.00	Oats, oat feed, gluten feed, wheat middlings, corn, hominy feed, salt.
Algrane Horse,......Beaver Coal & Gr. Co.	Norwood	13.58	11.00	4.13	4.00	8.42	9.00	
Algrane Horse,......Beaver Coal & Gr. Co.	Norwood	12.52	11.00	4.54	4.00	9.80	10.00	
Lexington Grain Co., Lexington, Mass.								
Alfalfa Horse,.......Lexington Grain Co.	Lexington	14.01	10.00	6.66	3.00	9.17	10.00	Alfalfa, oats, barley, hominy feed, gluten feed, wheat middlings, grain screenings, salt.
Alfalfa Union Horse, Lexington Grain Co.	Lexington	13.93	9.00	6.18	3.00	7.20	13.00	Alfalfa, hominy meal, wheat mixed feed, grain screenings, corn, oats, oat screenings, salt.
Alfalfa Union Horse, Lexington Grain Co.	Lexington	12.52	9.00	6.52	3.00	7.10	13.00	

MOLASSES FEEDS.—(Less than 15% Protein.)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
Allneeda Mills Co., E. St. Louis, Ill.								
Butterfat, ... W. G. Horton	Ipswich	14.08	15.00	2.99	3.00	7.68	15.00	Cottonseed meal, alfalfa, brewers' grains, ground screenings from corn and oats, molasses, salt.
Allneeda H. & M., . . . J. Burkhardt	Beverly	10.73	9.00	2.86	3.00	11.34	12.00	Corn, oats, alfalfa, molasses, salt.
Allneeda H. & M., . . . Highland Mills	Newton Hi'lands	9.87	9.00	2.45	3.00	10.09	12.00	
Clover Leaf Milling Co., Buffalo, N. Y.								
Clover Leaf Horse, . . Prosper Foisy	New Bedford	11.45	10.00	3.22	3.00	6.24	12.00	Corn, oats, alfalfa, molasses, salt.
Clover Leaf Horse, . . A. Milot & Sons	Taunton	11.46	12.00	3.36	3.00	8.66	12.00	
Dwight E. Hamlin & Co., Pittsburg, Pa.								
H. & S. Alfalfa, ... Malden Grain Co	Malden	14.11	14.00	3.03	3.50	10.45	16.00	Alfalfa, molasses, distillers' grains, brewers' grains.
International Sugar Feed Co., Minneapolis, Minn.								
Climax, ... Prentiss, Brooks & Co.	Holyoke	14.44	12.50	4.73	4.00	10.96	12.00	Cottonseed meal, molasses, ground grain screenings, clipped oat by-product, salt.
Inter. Special Dairy, Worcester Hay & Gr. Co	W. Brookfield	14.87	15.00	5.47	4.50	12.91	12.00	Cottonseed meal, molasses, ground grain grain screenings, clipped oat by-product, salt.
The Meader-Atlas Co., New York, N. Y.								
Trojan Horse, ... Prosper Foisy	New Bedford	13.66	12.00	3.14	3.00	6.08	8.00	Crushed oats, cracked corn, cane molasses, brewers' grains.
The Molassine Co., Boston, Mass.								
Molassine, ... E. C. Packard	Brockton	8.98	7.00	0.62	0.50	6.59	7.00	Sphagnum moss and molasses.
Molassine, ... E. C. Packard	Brockton	9.30	7.00	0.48	0.75	5.59	7.00	
North West Mills Co., Winona, Minn.								
Sugarota Horse, ... Guay Bros	New Bedford	11.76	10.00	2.81	3.00	5.17	14.00	Oats, barley, cracked corn, molasses, salt,
A. Nowak & Son, Buffalo, N. Y.								
Justice Molassified Horse, A. Dodge & Son	Beverly	11.24	8.00	4.39	2.00	5.70	9.00	Oats, cracked corn, corn feed meal, wheat bran, molasses.
M. C. Peters Mill Co., Omaha, Neb.								
Arab Horse, ... Torrence Vary & Co.	Lynn	10.92	9.00	1.89	2.00	9.75	15.00	Cracked corn, alfalfa, molasses, oats.
Arab Horse, ... Ropes Rros.	Salem	10.63	9.00	2.32	2.00	7.30	15.00	
Arab Horse, ... Ropes Bros	Salem	10.93	9.00	2.04	2.00	8.98	15.00	
June Pasture Feed, . . Ropes Bros.	Salem	12.50	10.00	1.19	0.50	16.11	26.00	Alfalfa, molasses.
King Corn Sugar, . . . Ropes Bros	Salem	10.96	8.00	1.94	1.50	8.97	18.00	Cracked corn, oats, alfalfa, molasses.
King Corn Sugar, . . . Ropes Bros	Salem	10.98	9.00	1.36	1.50	10.10	18.00	

MOLASSES FEEDS.—(Less than 15% Protein.)—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
The Quaker Oats Co., Chicago, Ill.								
Green Cross Horse, . . Brockleman Bros.	Clinton	10.96	10.00	2.43	3.00	10.14	10.00	Alfalfa, corn, oats, cottonseed meal, molasses, oat feed,
Green Cross Horse, . . Frank Gauvin	Marlboro	10.62	10.00	2.69	2.50	8.73	12.00	
Green Cross Horse, . . Frank Gauvin	Marlboro	11.26	10.00	2.21	3.00	11.07	10.00	
Green Cross Horse, . . Springfield Com. Co.	Springfield	11.48	10.00	2.21	3.00	11.27	10.00	
Green Cross Horse, . . S. B. Green & Co.	Watertown	11.11	10.00	2.35	3.00	9.64	10.50	
Green Cross Horse, . . C. H. Symmes	Winchester	11.39	10.00	2.10	3.00	10.82	10.50	
Ralston Purina Co., St. Louis, Mo.								
Purina, . . A. E. Lawrence & Son	Ayer	11.32	9.00	1.84	1.50	8.29	12.00	Cracked corn, oats, alfalfa, molasses, salt.
Purina, . . W. E. Bryant & Co.	Brockton	10.59	9.00	2.29	1.50	7.74	12.00	
Purina, . . Brockleman Bros.	Clinton	10.16	9.00	2.70	1.50	8.11	12.00	
Purina, . . Prentiss, Brooks & Co.	Easthampton	10.86	9.00	2.94	1.50	9.78	12.00	
Purina, . . Bowen & Fuller	Leominster	10.42	9.00	2.27	1.50	10.54	12.00	
Purina, . . Berkshire Cl. & Gr. Co.	N. Adams	10.84	9.00	2.38	1.50	9.89	12.00	
Purina, . . I. Morton & Co.	Plymouth	11.18	9.00	2.12	1.50	9.80	12.00	
Purina, . . M. G. Williams	Raynham	10.35	9.00	2.12	1.50	9.41	12.00	
Purina, . . Prentiss, Brooks & Co.	Westfield	10.38	9.00	2.69	1.50	11.56	12.00	
Purina, . . P. W. Eaton & Co.	Williamstown	10.26	9.00	2.28	1.50	9.31	12.00	
Purina, . . C. W. Bowker & Co.	Worcester	10.26	9.00	2.35	1.50	8.99	12.00	
Purina Sweet, . . Berkshire Cl. & Gr. Co.	N. Adams	12.02	10.30	1.73	1.20	16.19	18.00	Alfalfa, ground grain screenings, molasses.
The Western Gr. Products Co,. Hammond, Ind.								
Hammond Horse, . . Marlboro Grain Co.	Marlboro	14.21	12.00	3.56	2.80	8.12	11.00	Corn, oats, barley screenings, malt sprouts, linseed meal, molasses, salt.
W. J. Wheelock Co., Greigsville, N. Y.								
Wheelock's Horse, . . Butman Cressy Co.	Lynn	10.71	10.00	4.34	3.00	5.89	12.00	Crushed oats, cracked corn, wheat bran, salt, molasses.

MISCELLANEOUS STARCHY FEEDS.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
A. H. Brown & Bros., Boston. Mass.								
Dried Grains, ... Bedford Coal & Gr. Co.	Bedford	12.87	10.00	4.31	2.50	15.35	20.00	Infant food residue prepared from malt, wheat flour and bran.
Dried Grains, ... H. A. Crossman Co.	Needham	12.78	10.00	4.55	2.50	14.25	20.00	
Lexington Grain Co., Lexington, Mass.								
Star Hog Feed, ... Lexington Grain Co.	Lexington	13.31	8.00	4.52	3.00	5.90	15.00	Wheat middlings, corn meal, mill refuse and sweepings, salt.
Star Hog Feed, ... Lexington Grain Co.	Lexington	13.58	8.00	4.80	3.00	6.69	15.00	
Quaker Oats Co., Chicago, Ill.								
Maz-All Feed, ... J. Burkhardt	Beverly	9.19	9.50	0.77	1.40	0.50	2.00	Corn product.
Toledo Elevator Co., Toledo, Ohio.								
Star Feed, ... F. Diehl & Son	Wellesley	9.02	7.00	6.00	5.50	9.65	12.50	Hominy feed, ground corn cobs.
Star Feed, ... F. Diehl & Son	Wellesley	9.02	7.00	5.92	5.50	10.81	10.00	

III. POULTRY FEEDS.

Meat Scraps.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein		Fat.		Fiber.	
		Found.	Guar.	Found	Guar.	Found.	Guar.
First Grade. (Over 45 per cent. Protein.)		%	%	%	%	%	%
American Agri. Chemical Co., Boston, Mass.							
Ground Beef, . . . G. F. Green Coal Co.	Campello	51.05	40.00	10.23	5.00	—	—
Butchers Rendering Co., Fall River, Mass.							
Spec. Poultry, . . Mackenzie & Winslow, Inc.	New Bedford	65.08	60.00	10.60	10.00	—	—
A. Lord & Co., Chelsea, Mass..							
Beef Scraps, ... D. B. Hodgkins Sons	Manchester	50.53	30.00	21.25	17.00	—	—
Lowell Fertilizer Co., Boston, Mass.							
N. Paquin & Sons	Fall River	47.37	40.00	14.13	8.00	—	—
Manchester Rendering Co., Manchester, N. H.							
Bone & Meat, . . . F. O. Andrews	Pepperell	50.96	40.00	13.56	8.00	—	—
Richmond Abbatoir, Richmond, Va.							
Rava, ... Lexington Grain Co.	Lexington	85.21	85.00	6.69	7.00	—	—
Rava, ... Lexington Grain Co.	Lexington	86.78	85.00	5.76	7.00	—	—
Sanford Winter Co., Brockton, Mass.							
E. C. Packard	Brockton	66.73	35.00	14.33	15.00	—	—
E. C. Packard	Brockton	66.73	35.00	13.31	15.00	—	—
Worcester Rendering Co., Auburn, Mass.							
Royal Worcester, . . . F. F. Woodward Co.	Fitchburg	45.97	40.00	10.97	9.00	—	—
Second Grade, (below 45 per cent. protein.)							
J. B. Garland & Son, Worcester, Mass.							
Royal Worcester, ... J. B. Garland & Son	Worcester	41.16	50.00	11.01	12.00	—	—
Greene Chicken Feed Co., Marblehead, Mass.							
Old Fashioned, . . Greene Chicken Feed Co.	Marblehead	39.67	30.00	6.78	5.00	—	—
Hinckley Rendering Co., Somerville, Mass.							
Special, ... J. W. Day & Co.	Lynn	39.87	45.00	12.23	8.00	—	—
Geo. E. Marsh Co., Lynn, Mass.							
C. H. Smith	Dighton	40.25	45.00	11.10	10.00	—	—
Mackenzie & Winslow, Inc.	Fall River	40.46	45.00	11.52	10.00	—	—
Highland Mills	Newton H'lands	41.51	45.00	10.89	10.00	—	—
Portland Rendering Co., Portland, Me.							
Portland Poultry, M. H. Rolfe Est.	Newburyport	40.54	40.00	10.23	8.00	—	—
G. T. Savage Poultry Sup. Co., Boston, Mass.							
XXX Poultry, . . Sumner Crosby & Son	Boston	43.34	45.00	11.82	10.00	—	—
C. M. Shay Fertilizer Co., Groton, Conn..							
Shay's Pure, ... Inter'l. Poultry Supply Co.	Springfield	39.41	40.00	15.87	10.00	—	—
Springfield Rendering Co., Springfield, Mass.							
H. C. Puffer Co.	Springfield	43.52	40.00	10.97	8.00	—	—
J. A. Torrey, Rockland, Mass.							
No. 1., ... The Albert Culver Co. Page 24	Rockland	39.31	40.00	13.33	15.00	—	—
A. L. Warren, Northboro, Mass.							
J. Cushing & Co.	Hudson	43.08	40.00	15.58	10.00	—	—
H. K. Webster Co., Lawrence, Mass.							
H. K. Webster Co.	Lawrence	38.93	55.00	12.60	12.00	—	—

MEAT AND BONE MEAL.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
American Agricultural Chem. Co., Boston, Mass.							
Bradley's Sup., G. F. Greene Coal Co.	Campello	37.83	30.00	8.12	8.00	—	—
Bradley's Sup., W. F. Fletcher	Southwick	39.72	30.00	8.08	8.00	—	—
Bowker Fertilizer Co., Boston, Mass.							
Bowker's Animal, W. N. Potter & Co.	Charlemont	42.91	40.00	7.12	5.00	—	—
John C. Dow Co., Boston, Mass.							
Favorite Poultry, J. Frank Kirk	New Bedford,	30.60	32.00	10.10	10.00	—	—
N. Roy & Sons, South Attleboro, Mass.							
Steamed, N. Attleboro Grain Co.	N. Attleboro	58.76	45.00	9.72	8.00	—	—

BONE MEAL.

Pawtucket Rendering Co., Pawtucket, R. I.							
N. Attleboro Grain Co.	N. Attleboro	25.31	20.00	5.39	5.00	—	—
Worcester Rendering Co., Auburn, Mass.							
Wallace Grain Co.	Clinton	22.51	20.00	6.10	5.00	—	—
A. L. Warren, Northborough, Mass.							
Warren's Cracked, Bowen & Fuller	Leominster	29.59	26.00	2.81	3.00	—	—

FISH MEAL.

American Glue Co., Boston, Mass.							
Bowen & Fuller	Leominster	50.18	50.00	1.52	2.50	—	—
Joseph Breck & Sons, Boston, Mass.							
Thorne Bros.	Millis	40.98	50.00	1.30	2.00	—	—
Greene Chicken Feed Co., Marblehead, Mass.							
Greene's Shredded, Greene Chick. Feed Co.	Marblehead	52.19	50.00	1.64	2.00	—	—
International Glue Co., Boston, Mass.							
Red Star, F. W. Dorr & Co.	Newton Center	53.76	45.00	1.56	0.02	—	—
Red Star, N. E. Poultry Supply Co.	Springfield	55.25	45.00	2.35	0.02	—	—
Red Star, Taunton Grain Co.	Taunton	49.13	11.30	1.98	0.02	—	—

MILK BY-PRODUCT.

The Bent Croissant Co., Antwerp, N. Y.							
Milk Albumen, The Albert Culver Co.	Rockland	47.72	43.00	0.42	1.00	—	—
Milk Albumen, Springfield Commission Co.	Springfield	50.79	43.00	0.55	1.00	—	—
Milk Albumen, Taunton Grain Co.	Taunton	47.54	43.00	4.43	1.00	—	—

ALFALFA AND CLOVER MEAL.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found.	Guar.	Found.	Guar.	Found.	Guar.
		%	%	%	%	%	%
American Milling Co., Chicago, Ill.							
Amco,..........C. H. Spring Co............	Newton Lr. Falls	15.59	13.00	1.47	2.00	26.78	—
Joseph Breck & Sons, Boston, Mass.							
Banner,........G. F. Greene Coal Co.......	Campello........	12.96	7.91	2.53	3.36	23.78	29.84
The Albert Dickinson Co., Chicago. Ill.							
H. E. Thompson...........	Plainville........	13.75	12.00	1.58	1.00	28.19	35.00
Glen Mills Cereal Co.......	Rowley	12.43	12.00	.86	1.00	38.27	35.00
H. C. Puffer Co............	Springfield.......	15.41	12.00	1.93	1.00	23.09	35.00
Thos. W. Emerson Co., Boston, Mass.,							
Cut Clover,.....Bosworth & Son............	Leominster......	10.59	7.91	2.36	3.36	27.85	29.84
Cut Clover,.....M. G. Williams............	Raynham.......	9.23	7.91	4.33	3.36	25.88	29.84
Bryan Haywood, Kansas City, Mo.							
Chickalfa,.......Mackenzie & Winslow, Inc.	New Bedford....	24.26	20.00	2.51	2.00	11.83	20.00
Kornfalfa Feed Milling Co., Kansas City, Mo.							
Pioneer,.........W. N. Potter & Co..........	Charlemont......	14.89	12.00	0.98	1.50	29.72	35.00
Pioneer,.........W. L. Palmer..............	Medway........	12.34	12.00	1.28	1.50	30.35	35.00
Pioneer,.........C. Parkinson...............	Seekonk.........	13.75	12.00	1.85	1.50	28.20	30.00
M. C. Peters Mill Co., Omaha, Neb.							
Lucerne,........D. B. Hodgkins & Sons......	Manchester......	14.63	12.00	1.27	0.50	30.73	33.00
Somers & Co., San Francisco, Cal.							
Red Star,.......A. H. Wood & Co..........	Framingham.....	14.71	—	1.56	—	28.40	—
Red Star,.......Bosworth & Son............	Leominster......	15.94	—	1.48	—	25.98	—
St. Albans Grain Co., St. Albans, N. Y.							
A. Culver & Co............	Rockland........	13.93	12.00	1.60	1.00	31.52	35.00

POULTRY MASH AND MEAL.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
Local Mixtures.								
Maine Mash. . . . . Berkshire C. & Gr. Co.	N. Adams.	23.21	10.00	4.64	5.00	7.83	5.00	Beef scraps, wheat bran, wheat middlings, corn meal, linseed meal, alfalfa.
Perfect Dry Mash, . . Covers Pltry. Sup. Store	Lowell.	14.63	16.55	3.89	5.06	7.69	7.31	Alfalfa, hominy meal, oats, corn meal, wheat mixed feed, meat & bone meal, gluten feed linseed meal, beef scraps, oat feed.
Perfect Dry Mash, . . J. B. Cover & Co.	Lowell.	16.55	15.00	4.86	3.00	9.30	7.31	
Climax Dry Ration, E. A. Cowee Est.	Worcester.	24.69	20.00	5.01	3.50	6.78	10.00	Wheat bran, oats, barley, gluten feed, corn meal, wheat middlings, alfalfa meal, linseed meal, meat and bone meal, fish scraps, salt.
Climax Dry Ration, E. A. Cowee Est.	Worcester.	19.44	20.00	4.11	3.50	7.12	10.00	
Eureka Mash, ... H. A. Crossman.	Needham.	21.45	20.00	4.93	5.00	6.13	7.00	Corn meal, wheat middlings, wheat mixed feed, alfalfa meal, linseed oil meal, gluten feed, beef scraps.
Poultry Mash, ... Cummings Chute & Co.	Woburn.	19.79	15.00	4.95	4.00	8.70	9.00	Shorts, wheat middlings, corn meal, hominy meal, meat meal, gluten feed, linseed oil meal, ground oats, alfalfa.
King Poultry Mash, Cutler Co.	N. Wilbraham . . .	18.65	18.00	4.35	3.00	9.51	11.00	Wheat bran, cocoanut meal, cottonseed meal, flax seed meal, locust bean meal, linseed oil meal, pea meal, fenugreek, wheat flour, dried milk, cocoa shells, salt, alfalfa, barley, meat and bone, corn meal, oat meal, wheat bran and middlings, fish meal, capsicum, lime stone grit.
Climax Crm. Mash, J. W. Day & Co.	Lynn.	20.93	24.00	5.03	5.00	5.65	7.00	Corn meal, gluten feed, middlings, wheat bran, meat scraps, milk albumen, alfalfa, bone.
Climax Crm. Mash, J. W. Day & Co.	Lynn.	21.28	24.00	5.09	5.00	7.28	7.00	
Climax Grow. Feed, J. W. Day & Co.	Lynn.	17.08	20.00	4.60	5.00	4.80	4.50	Wheat bran, meat, bone, fish, milk albumen, corn meal, hominy, oats, wheat middlings.
Climax Meat Mash, J. W. Day & Co.	Lynn.	18.30	17.50	4.41	3.50	9.00	7.00	Corn meal, wheat bran, and middlings, oats gluten feed, alfalfa, fish, meat scraps, charcoal.
Climax Meat Mash, J. W. Day & Co.	Lynn.	18.91	17.50	3.77	3.50	8.50	7.00	
Beverly Dry Mash, . . A. Dodge & Son Corp. . .	Beverly.	20.49	20.00	5.11	4.50	7.49	7.00	Wheat bran, flour middlings, corn meal, hominy meal, linseed meal, gluten feed, alfalfa, ground barley and oats, salt, beef scraps, bone meal.
Poultry Mash, ... F. A. Fales.	Norwood.	16.64	15.00	4.11	4.00	6.00	8.00	Wheat bran and middlings, corn meal, ground oats, gluten feed, alfalfa, beef scraps, fish scraps, linseed meal.
Poultry Mash, ... F. A. Fales.	Norwood.	18.48	15.00	4.00	4.00	5.50	8.00	
Fullerton's O.K. Poultry Mash, E. & A. M. Fullerton. . .	Brockton.	14.80	18.00	3.13	7.00	6.57	7.00	Corn meal, gluten feed, wheat middlings, hominy feed, ground oats, ground barley, meat and bone meal, alfalfa meal.

POULTRY MASH AND MEAL.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
Daisy Mash Feed, . . . F. Gauvin	Marlboro	14.19	13.40	4.64	4.50	5.83	5.15	Wheat bran, hominy meal, corn meal, wheat middlings, gluten feed, oats.
Neponset Plty. Mash WK Gilmore & Sons, Inc.	Walpole	20.05	14.00	3.62	3.00	8.55	10.00	Wheat bran and middlings, corn meal, ground oats, alfalfa meal, gluten feed, beef scraps, fish scraps, linseed oil meal, beet pulp.
Poultry Mash, ... S. B. Green & Co.	Watertown	24.34	20.00	4.62	4.00	6.73	7.00	Meat scraps, fish scraps, wheat bran, gluten feed, linseed meal, corn meal, wheat middlings, alfalfa.
Poultry Mash, ... S. B. Green & Co.	Watertown	25.18	20.00	4.48	4.00	6.35	7.00	
Green's 5% Mt. Msh. Green Chick. Feed Co.	Marblehead	12.87	12.00	4.16	3.00	6.93	7.00	Meat scraps, corn meal, hominy feed, wheat, shell lime, oats, flax screenings, cocoa bran, wheat bran, salt.
Mash Feed, ... Hingham Gr. Mill, Inc.	Hingham	18.91	15.00	4.72	4.00	8.80	12.00	Wheat bran and middlings, corn meal, ground oats, meat scraps, alfalfa meal.
Mash Feed, ... Hingham Gr. Mill, Inc.	Hingham	16.73	15.00	5.22	4.00	8.05	12.00	
Wadsworth Plty. Mix. D. B. Hodgkins & Sons.	Manchester	17.43	18.00	4.13	4.00	7.72	7.00	Wheat bran and middlings, corn meal, alfalfa meal, beef scraps, rolled oats, ground oats, linseed oil meal, gluten feed.
Wadsworth Plty. Mix. D. B. Hodgkins & Sons	Gloucester	18.56	18.00	3.88	4.00	8.68	7.00	
Dry Mash, ... Jaquith & Co.	Woburn	16.38	16.00	4.78	4.00	7.85	5.50	Corn and wheat meal, rolled oats, gluten feed, linseed oil meal, meat meal, milk albumen, alfalfa.
Dry Mash, ... Jaquith & Co.	Woburn	18.91	16.00	4.06	4.00	8.05	5.50	
Lex. Pltry. Mash, . . . Lexington Grain Co	Lexington	24.78	18.00	4.32	3.00	6.15	9.00	Meat and fish scraps, gluten feed, linseed meal, alfalfa meal, wheat middlings, wheat bran, corn meal and salt.
Lex. Pltry. Mash, . . . Lexington Grain Co	Lexington	24.08	18.00	4.82	3.00	6.43	9.00	
Union Pltry. Mash, . . Lexington Grain Co	Lexington	20.09	13.00	3.56	3.00	8.68	13.00	Meat and fish scraps, corn meal, gluten feed, alfalfa meal, hominy meal, grain cleanings, wheat bran and middlings, salt.
Loham Bros. Mash, Loham Bros	Marblehead	20.05	18.00	5.18	4.00	7.97	10.00	Wheat bran and middlings, alfala, fish and meat scraps, gluten meal, hominy meal, salt.
Mansfield Chick Growing Feed, Mansfield Milling Co.	Mansfield	20.40	17.50	4.03	4.00	5.54	8.00	Wheat bran, corn meal, red dog flour, fish scraps, alfalfa, oat meal, charcoal.
Mansfield Chick Growing Feed, Mansfield Milling Co.	Mansfield	19.26	17.50	3.85	4.00	6.37	8.00	
Mans. Dry Plty. Mash Mansfield Milling Co.	Mansfield	21.54	22.00	5.41	6.00	5.86	7.00	Wheat bran, corn meal, red dog flour, wheat middlings, gluten feed, alfalfa, meat scraps.
Mans. Dry Plty. Mash Mansfield Milling Co.	Mansfield	21.94	22.00	5.37	6.00	6.06	7.00	
Pltry Mt. Mash, ... Malden Grain Co.	Malden	19.26	20.00	5.00	6.00	6.50	10.00	Meat scraps, corn meal, alfalfa, wheat bran milk albumen, oil meal.
Bos. Dry Msh. Feed, W. T. McLaughlin Co.	W. Roxbury	16.55	18.00	4.56	5.00	6.83	5.90	Linseed oil meal, gluten feed, beef scraps, fish scraps, wheat bran, alfalfa, hominy meal, wheat middlings, corn meal.

POULTRY MASH AND MEAL.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
Bos. Growing Feed, W. T. McLaughlin Co.	W. Roxbury	14.19	14.00	4.81	3.00	6.42	7.00	Wheat bran and middlings, linseed oil meal, meat scraps, hominy meal, corn meal, fish scraps ground oats, molasses, sphagnum moss.
Garden City Dry Mash, Merrill Food & Chem. Co.	Beverly	14.01	12.00	4.48	3.00	5.19	7.00	Meat scraps, corn meal, wheat, shells, lime, hominy feed, flax screenings, oats, cocoa bran, wheat bran, alfalfa, salt.
Poultry Hash, Ropes Bros.	Danvers	15.99	13.00	4.97	4.50	8.57	11.00	Shredded wheat, hominy meal, linseed oil meal, gluten feed, alfalfa meal, wheat mixed feed, bone meal, rolled oats.
Poultry Hash, Ropes Bros.	Danvers	15.33	13.00	4.43	4.50	7.03	11.00	
Dry Mash, H. K. Webster Co.	Lawrence	13.04	20.00	3.24	3.00	6.69	10.00	Wheat feed, alfalfa, corn, gluten feed, rolled oats, beef scraps, beet pulp, linseed oil meal.
W & H Dry Mash, Wilson & Holden	Worcester	22.59	20.00	4.75	3.50	5.66	10.00	Wheat bran and middlings, ground oats, ground barley, gluten meal, corn meal, alfalfa, linseed meal, ground bone, fish scraps, salt.
Wood's Poultry Mash Mixture. A. H. Wood & Co.	Framingham	21.28	20.00	5.67	4.00	7.59	10.00	Corn meal, ground oats, wheat bran and middlings, alfalfa meal, gluten feed, cottonseed meal, linseed meal, beef scraps, fish scraps, meat meal.
Wood's Poultry Mash Mixture, A. H. Wood & Co.	Framingham	20.40	20.00	5.25	4.00	9.27	10.00	
Blatchford's Calf Meal Factory, Waukegan, Ill.								
Fill the Basket Egg Mash, M. Callahan Co.	Holyoke	17.95	19.00	3.86	4.00	9.12	10.00	Blatchford's calf meal, alfalfa, barley, bone, corn and oat meals, wheat bran and middlings, beef scraps, fish, capsicum, limestone grit.
Fill the Basket Egg Mash, Springfield Com. Co.	Springfield	18.91	19.00	4.42	4.00	10.94	10.00	
Fill the Basket Egg Mash, H. C. Puffer Co.	Springfield	19.26	19.00	4.41	4.00	10.65	10.00	
Buffalo Cereal Co., Buffalo, N. Y.								
Poultry Mash, Griffin Bros.	Fall River	15.41	15.00	5.33	4.00	4.78	5.00	Cornmeal, wheat bran and middlings, hominy feed, gluten feed, oat middlings, rolled oats.
Poultry Mash, H. L. Patrick	Hopedale	17.86	15.00	5.65	4.00	5.50	6.00	
Poultry Mash, The Albert Culver Co.	Rockland	17.95	15.00	5.53	4.00	5.33	6.00	
E. A. Cowee Est., Worcester, Mass.								
Climax Dry Ration, C. Wyman	Hubbardston	19.96	20.00	4.13	3.50	5.79	10.00	Wheat bran, oats, barley, gluten feed, corn meal, wheat middlings, alfalfa meal, linseed meal, meat & bone meal, fish scraps, salt.
Climax Dry Ration, I. J. Rowell	Pepperell	18.35	20.00	5.01	3.50	5.67	10.00	
Climax Dry Ration, I. J. Rowell	Pepperell	21.36	20.00	4.73	3.50	6.96	10.00	
Climax Grow. Feed, C. T. Wyman	Hubbardston	15.24	14.00	4.38	4.00	4.37	5.00	Wheat bran & middlings, corn, oats, barley, hominy meal, meat and bone meal, salt, locust bean meal, linseed meal.

POULTRY MASH AND MEAL.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein. Found.	Protein. Guar.	Fat. Found.	Fat. Guar.	Fiber. Found.	Fiber. Guar.	Certified Ingredients.
		%	%	%	%	%	%	
Chas. M. Cox Co., Boston, Mass.								
Wirthmore Fish and Scrap Mash, Scott Grain Co.	Amesbury	22.77	17.20	3.26	4.00	6.35	9.50	Ground oats, ground barley, gluten feed, alfalfa meal, wheat bran, corn meal, beef scraps, fish meal, wheat middlings, salt.
Wirthmore Fish and Scrap Mash, Eastern Grain Co.	Bridgewater	21.71	17.20	3.20	4.00	5.07	9.50	
Wirthmore Fish and Scrap Mash, Eastern Grain Co.	Bridgewater	21.89	17.20	3.33	4.00	6.36	9.50	
Wirthmore Fish and Scrap Mash, H. P. Howland	Spencer	16.99	17.20	3.19	4.00	6.00	9.50	
Wirthmore Fish and Scrap Mash, N. E. Poultry Sup. Co.	Springfield	20.58	17.20	3.94	4.00	6.30	9.50	
Wirth. Mash Feed, F. H. Crane & Sons	Quincy Adams	14.80	12.00	3.67	3.00	6.24	9.50	Ground oats, ground barley, gluten feed, alfalfa meal, wheat bran, corn meal, wheat middlings, salt.
The Cutler Co., North Wilbraham, Mass.								
King Mash Feed, A. A. Putney & Sons	E. Brookfield	18.56	18.00	4.94	3.00	9.18	11.00	Bran, cocoanut, cottonseed, flax seed, locust bran, linseed oil meal, pea meal, fenugreek, wheat flour, dried milk, cocoa shells, salt, alfalfa, barley, bone, corn and oat meals, wheat bran, and middlings, beef scraps, fish, capsicum, limestone grit.
King Mash Feed, Cutler Co.	W. Brookfield	19.09	18.00	4.29	3.00	8.93	11.00	
King Mash Feed, Smith Feed Co.	Westfield	18.04	18.00	4.25	3.00	9.06	11.00	
Cyphers Incubator Co., Buffalo, N. Y.								
Growing Mash, J. A. Sullivan	Northampton	18.52	18.00	4.70	3.00	3.65	10.00	Ground oats, corn meal, wheat middlings, alfalfa meal, bone and meat meal.
Fottler-Fiske-Rawson Co., Boston, Mass.								
Quality Mash, Summer-Crosby & Son	Boston	19.35	20.00	5.48	4.00	11.43	10.00	Corn meal, wheat bran, ground oats, wheat middlings, alfalfa meal, beef scraps, gluten feed, linseed oil meal.
Greene Chicken Feed Co., Marblehead, Mass.								
Greene's Grow. Feed, I. J. Rowell	Pepperell	13.19	12.00	4.39	3.00	4.96	5.50	Fish scraps, meat and bone meal, corn, wheat, barley, flax, oats, shell lime, cocoa bran, grass and weed seeds.
Meat Mash 5%, Geo. R. Doane	N. Brookfield	13.49	12.00	4.00	3.00	8.29	7.00	Meat scraps, corn meal, hominy feed, wheat, shell lime, oats, flax screenings, cocoa bran, wheat bran, salt.

POULTRY MASH AND MEAL.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
Hen-E-Ta Bone Co., Newark, N. J.								
Hen-O-La Dry Msh. Wallace Grain Co.	Clinton	12.65	12.00	2.61	2.00	4.05	4.00	Corn meal, gluten feed, wheat bran and middlings, linseed oil meal, Heneta grits.
Hen-O-La Dry Msh. H. C. Puffer Co.	Huntington	12.34	12.00	2.82	2.00	3.97	4.00	
Hen-O-La Dry Msh. C. P. Washburn	Middleboro	12.26	12.00	3.04	2.00	4.07	4.00	
Hen-O-La Dry Msh. Beaver Coal & Gr. Co.	Norwood	12.92	12.00	2.63	2.00	4.06	4.00	
Hen-O-La Dry Msh. J. Cushing & Co.	Stoughton	12.69	12.00	2.40	2.00	5.32	4.00	
Wm. S. Hills Co., Boston, Mass.								
Purity Grow. Feed.. J. Burkhardt	Beverly	20.80	19.00	5.28	6.00	3.93	10.00	Corn meal, hominy feed, wheat middlings, fish meal, beef scraps, oat meal.
Pur. Poultry Msh.... H. J. Williams	Lowell	20.31	17.00	5.89	4.00	6.40	10.00	Beef scraps, fish meal, linseed oil meal, alfalfa meal, cottonseed meal, wheat bran, corn meal, and cracked corn, oats, barley.
Pur. Poultry Msh.... Wilder & Wotton	Lowell	16.29	17.00	5.38	4.00	9.20	10.00	
H. O. Co., Buffalo, N. Y.								
H. O. .... G. F. Greene Coal Co.	Campello	18.88	17.00	4.65	4.50	6.55	9.00	Oat middlings, rolled oats, gluten feed, wheat bran and middlings, hominy feed.
H. O. .... H. K. Webster	Lawrence	18.91	17.00	5.14	4.50	6.58	9.00	
H. O. .... Lenox Coal Co.	Lenoxdale	18.61	17.00	5.44	4.50	6.82	9.00	
H. O. .... Beaver Coal & Gr. Co.	Norwood	18.04	17.00	4.82	4.50	6.90	9.00	
Dry Poultry Msh.... Beaver Coal & Gr. Co.	Norwood	20.05	18.00	3.48	3.50	10.25	9.00	Oat middlings, gluten feed, wheat bran and middlings, rolled oats, alfalfa meal, corn, hominy feed, wheat.
Mystic Milling & Feed Co., Rochester, N. Y.								
Mystic Laying Msh. W. P. Griffin	Pittsfield	19.22	23.00	5.46	4.00	6.03	8.00	Wheat bran and middlings, corn meal, linseed oil meal, gluten feed, blood meal, bone meal, alfalfa meal.
A. Nowak & Son, Buffalo, N. Y.								
Lay-Egg-O Dry Msh. A. Dodge & Sons Corp.	Beverly	13.31	12.00	3.36	3.00	3.33	5.00	Corn feedmeal, gluten feed, wheat bran and middlings, Heneta grits.
Lay-Egg-O Dry Msh .A. Dodge & Sons Corp.	Beverly	13.40	12.00	2.93	3.00	3.88	5.00	
Park & Pollard Co., Boston, Mass.								
Dry Mash,..... T. H. Emerson	E. Weymouth	17.56	18.00	3.01	3.50	7.79	12.00	Ground wheat, wheat bran, and middlings, corn, oats, barley, Kaffir corn, buckwheat, alfalfa, fish, meat, bone, beet pulp, salt.
Dry Mash,..... Mackenzie & Winslow, Inc.	Fall River	18.83	18.00	3.33	3.50	5.80	12.00	
Dry Mash,..... N. E. Poultry Supply Co.	Springfield	20.93	18.00	3.62	3.50	6.38	12.00	
Growing Feed,.. Mackenzie & Winslow, Inc.	Fall River	15.50	10.00	3.90	3.50	4.15	8.00	Corn, wheat, barley, oats, meat, bone, alfalfa, Kaffir corn, wheat bran and middlings, buckwheat, beet pulp and salt.
Growing Feed,.. T. H. Emerson	E. Weymouth	15.06	10.00	3.35	3.50	3.65	8.00	

POULTRY MASH AND MEAL—*(Continued)*

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found.	Guar.	Found.	Guar.	Found.	Guar.	
		%	%	%	%	%	%	
W. N. Potter & Sons, Greenfield, Mass.								
Poultry Mash,. . W. N. Potters Sons & Co. . . .	Northampton. . . .	15.15	15.00	5.67	4.00	7.38	11.00	Hominy feed, oats, corn, gluten feed, wheat by-products, alfalfa, linseed oil meal.
Poultry Mash,. . W. N. Potter Grain Co.	Princeton.	19.00	15.00	5.26	4.00	8.39	11.00	
Pratt Food Co., Philadelphia, Pa.								
Pratt's Baby Chick Feed, H. Bruckman.	S. Lawrence.	14.54	13.00	6.13	4.75	2.58	3.00	Hulled oats, corn meal, wheat middlings, Epsom salts, bone meal, cooked wheat, pepper, gentian, millet, ginger, rape, caraway, shell meal.
Ralston Purina Co., St. Louis, Mo.								
Chick. Chowder, Mackenzie & Winslow, Inc.	Fall River.	18.83	17.00	4.49	3.00	7.67	8.00	Wheat bran and middlings, corn meal, alfalfa meal, linseed meal, granulated meat, salt, charcoal.
Chick. Chowder, M. G. Williams.	Raynham.	20.31	17.00	5.30	3.00	8.42	9.00	
G. T. Savage Poultry Supply Co., Boston, Mass								
Savage's Growing and Forcing Food, Sumner, Crosby & Sons, Inc.	Boston.	15.24	11.50	4.79	3.50	6.22	6.89	Corn meal, wheat bran, ground oats, meat and bone meal.
Meat Cereal,. . . . Sumner, Crosby & Sons, Inc.	Boston.	14.45	11.50	5.97	3.00	8.25	9.33	Corn meal, wheat bran, ground oats, meat scraps, charcoal.
Meat Cereal,. . . . Sumner, Crosby & Sons, Inc.	Boston.	14.36	11.50	4.60	3.50	8.08	9.33	
Spratts Patent Ltd., Newark, N. J.								
Spratt's Egg Mash,. . J. Frank Kirk.	New Bedford. . . .	23.96	24.00	5.10	4.50	5.18	8.00	Wheat bran, wheat, corn meal, alfalfa meal, meat, rice, Kaffir corn, buckwheat, bone, charcoal, peas.
Spratt's Pat. Ch. Fd. Ropes Bros.	Salem.	22.07	20.00	2.41	2.50	0.77	2.00	Wheat flour, meat.

DISCUSSION OF THE INSPECTION.

I. Protein Feeds.

Cottonseed Meal and Feed. Pages 6-7.

The quality of cottonseed meal as shown by the samples collected in Massachusetts is gradually growing poorer. In 1912 only 34 per cent. of the samples collected showed less than 41 per cent. protein; in 1913, 65 per cent; and in 1914, 68 per cent. The average fiber percentage, which is an indication of hull content, has increased. In 1911 it was 7.70 per cent; in 1912, 8.38 per cent; in 1913, 9.15 per cent, and for the present year, 9.37 per cent. This condition will continue to exist just as long as the consumer makes no distinction in the value of cottonseed meal of different grades.

As a dairy feed cottonseed meal of good quality is one of the cheapest sources of protein and on account of the nitrogen and phosphates which it contains, has a manurial value greater than any other feed. Two or three pounds daily fed with other and more bulky foods are usually considered more satisfactory than larger amounts.

Average Analyses of the Various Brands of Cottonseed Meal Collected.

Brands	Manufacturer or Jobber	Number Samples.	Protein. %	Fat. %	Fiber. %
Red Tag	Amer. Cotton Oil Co.	3	41.02	7.02	9.61
Buckeye	Buckeye Cotton Oil Co.	12	39.22	7.16	10.57
Owl	F. W. Brode & Co.	4	42.52	8.03	6.66
Old Gold	T. H. Bunch Com. Co.	1	39.14	7.62	9.85
Acme	T. H. Bunch Com. Co.	1	37.56	7.78	11.62
Peerless	Florida Cotton Oil Co.	1	39.14	9.86	8.77
Dixie	Humphreys-Godwin Co.	7	40.09	7.84	9.43
Forfat	Humphreys-Godwin Co.	4	40.69	7.65	9.25
Imperial Cotto	Imperial Cotto Milling Co.	2	42.23	8.91	6.93
Selden	Memphis Cottonseed Products Co.	2	41.42	7.93	8.24
Robin	Geo. B. Robinson, Jr.	1	42.52	8.12	8.67
Dirigo	W. Newton Smith	2	38.88	8.48	10.20
Pilgrim	J. E. Soper Co.	6	39.76	7.43	9.44
Pioneer	J. E. Soper Co.	4	40.92	6.92	9.27

Average Analyses and Retail Prices

	High Grades (Choice)	Medium Grades (Prime and Good)	High and Medium Grades.
	1912	1912	1912
No. Samples	42	22	64
Protein (per cent),	42.06	39.10	41.04
Fat (per cent),	7.83	7.57	7.74
Fiber (per cent),	7.86	9.36	8.38
Price a ton,	$34.70	$33.85	$34.40
	1913	1913	1913
No. Samples,	31	56	87
Protein (per cent),	42.56	38.86	40.18
Fat (per cent),	7.56	7.79	7.71
Fiber (per cent),	7.79	9.90	9.15
Price a ton,	$34.47	$34.56	$34.15
	1914	1914	1924
No. Samples,	16	34	50
Protein (per cent),	42.23	39.26	40.21
Fat (per cent,)	7.87	7.50	7.62
Fiber (per cent),	7.84	10.09	9.37
Price a ton,	$36.25	$36.13	$36.17

Six samples of cottonseed feed were examined. The "Creamo" and "77" brands were practically as represented, while the "Royal" brand in every case contained less protein and more fiber than guaranteed. In spite of warnings to the manufacturers this condition has existed for some time and complaints against two dealers handling these goods were entered. Cottonseed hulls, either by themselves or as a component of cottonseed meal, cannot be considered economical for the northern feeder.

Average Analyses and Retail Price.

No. Samples,	6
Protein, (per cent),	20.62
Fat (per cent),	3.95
Fiber (per cent),	25.08
Price a ton,	$28.80

Linseed Meal Page 8. The linseed meal found was of uniformly good quality. The average price at which it was offered was about two dollars a ton in advance of cottonseed meal. At this price it could not be considered an economical feeding stuff unless desired for a special purpose such as giving a sleek and glossy coat to horses or dairy stock, to hasten the moulting of poultry, or as a slight laxative when fed with a heavy ration. It is also a valuable component of milk substitutes for young calves.

Consumers are cautioned against purchasing linseed meal guaranteed to contain less than 30 per cent protein. Such meal is usually a mixture of ground linseed cake and linseed screenings.

Average Analyses and Retail Prices.

New Process.

	1911	1912	1913	1914
No. Samples,	2	5	4	2
Protein (per cent).	39.95	37.10	37.21	36.47
Fat (per cent),	2.70	2.31	2.31	3.77
Fiber (per cent),	7.20	8.29	8.59	8.61
Price a ton,	$39.00	$41.60	$39.00	$38.50

Old Process.

	1911	1912	1913	1914
No. Samples,	8	18	31	25
Protein (per cent),	37.11	35.61	34.56	33.63
Fat (per cent),	5.76	6.72	6.74	6.98
Fiber (per cent),	7.15	7.45	7.76	8.93
Price a ton,	$40.50	$43.29	$40.03	$38.02

Gluten Meal Page 8. But one brand of gluten meal, Diamond, is offered for sale in Massachusetts. At the price for which it was sold, it was a satisfactory source of protein for the dairy ration.

Average Analyses and Retail Prices.

	1913	1914
No. Samples,	9	11
Protein (per cent),	41.88	41.35
Fat (per cent),	2.18	1.40
Fiber (per cent),	2.31	2.28
Price a ton,	$36.00	$37.44

Gluten Feed Page 9. The gluten feeds collected were practically as represented with the exception of "Cream of Corn" brand which is evidently carrying a higher fat guarantee than can be maintained.

Gluten feed is a satisfactory and economical feed for stock when fed in conjunction with other concentrates.

Average Analyses and Retail Prices.

	1911	1912	1913	1914
No. Samples,	11	30	41	36
Protein (per cent),	25.77	25.64	25.71	24.94
Fat (per cent),	3.35	2.57	3.24	2.86
Fiber (per cent),	6.42	6.63	6.67	6.68
Price a ton,	$28.88	$32.86	$31.96	$33.11

Distillers' Dried Grains Page 10. Distillers' dried grains consist chiefly of the dried hulls, germ, and other non-fermentable portions of the grains left after the manufacture of distilled liquors from the cereal grains. In a wet state this residue is known as distillers' slop. The quality of the dried grains depends first, upon the quality of the distillers' mashes (upon the kinds and proportions of the grains employed), second, upon the distillers' mode of mashing, and third, upon the process of drying. Distillers' grains derived from corn have the highest feeding value while those derived from rye have the lowest. If heated too hot in the process of drying, it is scorched, which causes a disagreeable taste and odor and a lessened digestibility.

On account of the removal of much of the digestible carbohydrate matter through fermentation, distillers' grains form a very acceptable component of a ration rich in carbohydrates or starch. The two rations following will be found well suited to milk production with corn distillers' grains as a component.

I.

150 lbs. distillers' grains,
150 " standard middlings,
100 " corn or hominy meal.
Mix and feed 7 pounds or quarts daily.

II.

150 lbs. distillers' grains,
50 " corn or hominy meal,
50 " cottonseed meal.
Mix and feed 7 pounds or quarts daily.

Individual samples of the several brands of distillers' grains varied considerably in analyses. This variation may have resulted in a large measure, from the difficulty of sampling accurately, due to the finer portion of the grains (which has a much higher protein and lower fiber content than the coarser part) sifting out easily from the coarse material.

Average Analyses and Retail Prices.

Corn Distillers' Grains.

	1911	1912	1913	1914
No. Samples,	7	22	34	26
Protein (per cent),	30.17	30.82	31.04	31.28
Fat (per cent),	11.84	11.64	10.75	10.44
Fiber (per cent),	11.16	10.64	11.37	10.51
Price a ton,	$32.66	$34.68	$34.53	$34.93

Brewers' By-Products Pages 10-11.

Malt sprouts, a by-product from the malting of barley, are not sold extensively in Massachusetts. As a rule, dairy stock find them rather unpalatable unless mixed with other concentrates. If fed in excess of two pounds daily they should be moistened before feeding. Frequently sprouts are found which contain excessive amounts of barley hulls, weed seeds, or dust. Malt sprouts free from such foreign material should be given the preference.

Brewers' dried grains are the kiln-dried residue from beer manufacture, and consist of a little of the starch and allied substances together with the hull germ and gluten of the barley. Formerly the brewers' grains produced in New England were all sold in the wet state to farmers in the immediate vicinity. Recently a number of the larger breweries in New England have installed drying apparatus and the sale of the dried grains is correspondingly on the increase. All of the samples collected were of uniformly good quality.

Brewers' grains have been shown to have a slightly superior feeding value to wheat bran for milk production. They are nearly as bulky as bran and serve as a distributor of the heavy concentrates.

For horses, dried brewers' grains serve excellently as a partial substitute for oats.

Average Analyses and Retail Prices.

Malt Sprouts.

	1911	1912	1913	1914
No. Samples,	5	17	4	8
Protein (per cent),	26.14	25.94	27.55	26.62
Fat (per cent),	1.01	1.45	1.14	1.28
Fiber (per cent),	12.98	11.19	13.13	12.47
Price a ton,	$26.50	$26.31	$28.20	$27.21

Brewers' Grains.

	1911	1912	1913	1914
No. Samples,	1	3	9	10
Protein (per cent),	25.54	26.52	25.63	29.13
Fat (per cent),	6.77	5.87	5.93	6.12
Fiber (per cent),	15.35	13.85	13.96	12.35
Price a ton,	$27.00	$28.33	$29.43	$29.43

Wheat By-Products. Pages 11-18.

Wheat products as found on the Massachusetts market consist of red-dog flour, flour middlings, standard middlings, wheat mixed feed and wheat bran. In accordance with a ruling of the Federal Government, all wheat by-products entering into interstate commerce and containing screenings that have been added after the wheat has been cleaned preparatory to being ground, must be so marked as to indicate their true composition. The usual procedure is to brand such products as "containing wheat screenings not exceeding mill run". While it has always been customary for most millers to add screenings to their by-products, a marked deterioration in some brands has been noticed since this rule went into effect. In purchasing, preference should be given to those brands that contain no screenings. For feeding, as measured both by percentage of protein and digestibility, red-dog flour, flour middlings, standard middlings, wheat mixed feed, and wheat bran, stand in the order named. In purchasing flour and standard middlings the consumer should be guided more by the appearance of the goods than by the name they bear, as the line of demarkation between them is not closely drawn.

Average Analyses and Retail Prices.

Wheat Middlings.

	1911	1912	1913	1914
No. Samples,	37	38	64	59
Protein (per cent),	——	17.74	17.88	17.84
Fat (per cent,)	——	5.04	5.17	5.28
Fiber (per cent),	——	5.83	5.76	6.25
Price a ton,	$30.62	$33.66	$32.20	$32.07

Wheat Mixed Feed.

	1911	1912	1913	1914
No. Samples,	76	138	184	115
Protein (per cent),	——	16.99	16.91	17.21
Fat (per cent),	——	4.59	4.71	4.79
Fiber (per cent),	——	7.01	7.27	7.14
Price a ton,	$29.51	$32.19	$30.73	$30.52

Wheat Bran.

	1911	1912	1913	1914
No. Samples,	23	28	57	54
Protein, (per cent)	——	16.47	15.86	16.47
Fat (per cent),	——	4.28	4.72	4.95
Fiber (per cent),	——	8.73	9.48	9.48
Price a ton,	$28.30	$31.58	$28.18	$28.23

Rye Feeds. Page 18.

Rye feeds are found only to a limited extent in the Massachusetts markets and have a feeding value substantially equivalent to standard wheat middlings. The samples collected were of good quality.

Wheat Feeds With Admixtures Page 19.

Feeding stuffs of this character have the appearance of the pure wheat product. When these mixtures first made their appearance they were often sold as pure wheat products and if it were not for preventive legislation the practice would still prevail. Those which contain ground corncobs have a relatively low digestibility and must be considered as very much inferior to pure wheat feeds in feeding value.

Badger Fancy Middlings contain corn flour, called by the manufacturers Maizo red dog and wheat middlings. The name "red dog" when applied to a corn product appears to be somewhat misleading. As a source of protein it will not prove as valuable as pure wheat middlings, but there is no doubt but what it will contain as much digestible matter.

Buckeye Feed, a mixture of wheat feed and rye shorts, is practically equivalent in feeding value to wheat mixed feed.

Dairy and Horse Feeds (More than 15 per cent Protein. Pages 19-21.

Feeds of this character are mixtures of several concentrates brought together by the manufacturer in the attempt to produce a balanced grain ration either for feeding milch cows or horses. Such feeds are often sold by the retailer to net a greater profit than are the standard products such as bran, corn, and oats. Some of them make very satisfactory grain rations and these, if the feeder is willing to pay the price and does not care to go the trouble of home mixing, will be found very acceptable providing they do not contain inferior by-products. It is believed, however, that it is possible to home-mix fully as good rations out of the standard feeding stuffs at a lower cost. Some of the less commonly known ingredients found in these feeding stuffs are as follows:

Cottonseed Cake is the term used for cottonseed meal as it comes from the press. In this particular instance its use is synonymous with cottonseed meal.

Peanut cake, the cake resulting from the extraction of oil from the peanut. Samples collected were found to contain about 36 per cent protein, 11 per cent fat and 7 per cent fiber. When of this quality it is a valuable protein concentrate.

Rice polish is the outer part of the rice kernel removed from the kernel in the process of preparing rice for human consumption after the hull and bran have been separated from the seed. It has about the same feeding value as corn meal.

Soy bean cake is the cake resulting from the extraction of oil from the soy bean. It approaches cottonseed meal in feeding value.

Locust beans, the pod of a leguminous tree, is rich in sugar and allied substances.

Fenugreek is an aromatic seed used principally for the pleasant odor it imparts to the feed.

Oat feed, is the residue resulting from the manufacture of cereal breakfast foods from oats. On account of the tough, woody hull of the oat it has a low digestibility and feeding value.

Barley feed is a product of the derivation of which is similar to oat feed but, judging from samples collected, having a much higher feeding value.

Oat hulls, *oats*, *oat shorts*. When these terms are used together oat feed is probably present, as all of these ingredients are found in oat feed.

Crushed oats when used in this connection are not the crushed hulled oats used as a human food but are unhulled oats that have been crushed by passing through heavy iron rolls.

Molasses Feeds.
Pages 22-23.

Molasses feeds usually contain some low grade milling offal such as screenings, oat clips or mill refuse. In spite of this fact they have considerable feeding value and when the better grades can be bought at a price ruling lower than that of wheat bran they form a satisfactory substitute for it.

The retail price asked for these goods is not warranted when the ingredients which go into them are considered. Occasionally molasses feeds are encountered which appear to be unpalatable to stock, probably due to the excessive amount of weed seed used. Some of the ingredients of molasses feeds not commonly known to the Massachusetts feeder are as follows:

Ground and bolted grain screenings, *cleaned grain screenings*, *ground grain screenings*, are all grain screenings especially prepared for molasses feeds. It is understood that, in some instances, certain seeds having a greater commercial value than the remainder of the screenings, are removed before grinding.

Clipped oat by-product or *oat clips* is the by-product obtained in the manufacture of clipped oats and may contain light, chaffy material broken from the ends of the hulls, empty hulls, light immature oats and dust.

Corn feed meal is the siftings obtained in the manufacture of cracked corn and table meal made from the whole grain.

Calf Meals.
Page 23.

The calf meals collected represent the attempt of several manufacturers to formulate satisfactory partial milk substitutes for young calves. It is the opinion of the writer that most of them contain substances that, while they do not add materially to the value of the mixture as a milk substitute, do greatly increase their cost.

Miscellaneous Protein Feeds.
Page 24.

Homcoline is a trade name applied to this particular brand of corn meal oil, a residue derived from the corn germ after extracting the oil.

Oat middlings are the floury portion of the oat kernel separated from it in the milling of rolled oats. When of good quality oat middlings have a feeding value equivalent to standard middlings.

Peanut oil meal, *cocoanut meal.* Both of these products are residues from the extraction of oil and are not extensively fed in Massachusetts. They are excellent protein concentrates.

CXX Feed is a by-product from the Postum Cereal factory. The results of a digestion experiment made at this station indicate it to have a very low feeding value.

Barley feed is a by-product from the milling of barley. The sample collected was of excellent quality.

II. Starchy (Carbohydrate) Feeds.

Meals Made from Cereal Grains. Pages 25-26.

The meals made from the cereal grains, corn, oats, and rye, are valuable sources of digestible carbohydrates, corn meal being usually the most economical. Rye, being less palatable, is less desirable than either oats or corn. Whenever possible, these meals should be derived from home-grown grain, the consumer depending upon the market more for protein concentrates. Where it is found necessary to supplement the home-grown ration with feeds rich in digestible matter the cereal meals, especially corn, will prove more economical than so-called stock feeds containing inferior cereal residues.

Much of the corn meal sold does not contain the entire seed but is rather that part of the kernel that remains from the manufacture of table meal and cracked corn. This product is fully equal in feeding value to meal made from the entire seed. It should be sold, however, as corn feed meal, a term used to describe meal of this type.

No adulteration was noted in any of the cereal meals. The considerable variation noted in the fat and fiber contents of the corn meals was due to the process of manufacture and to the relative proportion of corn bran and germ in the meal.

Average Analyses and Retail Prices.

Corn Meal.

	1911	1912	1913	1914
No. Samples,	19	53	20	47
Protein (per cent),	8.17	8.87	9.05	9.47
Fat (per cent),	2.77	3.65	3.78	3.58
Fiber (per cent),	1.58	1.85	2.04	2.22
Price a ton,	$24.10	$31.44	$25.92	$33.58

Provender Pages 27-28.

Provender, as understood locally, is a mixture of straight corn and oats ground together. The samples reported were found free from adulteration. Provender containing over 6 per cent of fiber should be viewed with suspicion.

Dried Beet Pulp. Page 28.

Beet pulp is the dried residue obtained in the manufacture of sugar from sugar beets. During the past year it has not only been received from the beet sugar factories of the west, but also from abroad. The imported beet pulp was sold under the label of the Larrowe Milling Company who control practically all the output of the United States.

Beet pulp that has been overheated in drying should be avoided as it is not relished by stock.

When moistened before feeding it forms an excellent succulent feed much relished by dairy stock, and can be used with particular advantage where cows are receiving large quantities of grain.*

Hominy Meal.
Pages 26-27.

Of hominy meal or feed little need be said except that it is one of the most satisfactory carbohydrate feeds. It is kiln-dried, uniformly sweet, of good flavor, and relished by all kinds of farm stock. When hominy meal can be purchased at a price equal to, or less than, corn meal it forms a satisfactory substitute wherever corn meal can be used.

Hominy meal consists of the softer parts of the corn kernel together with the corn germ separated in the manufacture of hominy grits. It is usually derived from white corn although yellow hominy feed is occasionally found. There is no difference in the feeding value. Owing to the fact that some manufacturers are recovering the corn oil from the corn germ, the average fat content of hominy feed is less than formerly.

All of the samples collected were of good quality and free from adulteration.

Average Analyses and Retail Prices.

	1911	1912	1913	1914
No. Samples,	21	50	67	62
Protein (per cent),	10.55	10.78	10.78	11.27
Fat (per cent),	7.79	7.54	7.29	6.96
Fiber (per cent),	3.87	3.68	3.85	4.23
Price a ton,	$26.62	$33.15	$30.85	$32.91

Stock and Horse Feeds
Pages 29-32.

Feeds of this character form an outlet for enormous quantities of inferior oat refuse. Almost without exception they contain oat feed, oat screenings or clipped oat by-product, none of which, in themselves, has a particularly high feeding value. The average price asked for these goods was only slightly lower than that asked for the better grade of by-products that they contain. For this reason they cannot be considered as economical for milk production as the straight hominy, corn or wheat by-products, which are quite commonly used as a component of these mixtures.

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*For a fuller discussion of the value of dried beet pulp, see 25th Report of this station, pp. 129-140.

Now that an attached statement of ingredients is required as well as the guaranteed protein, fat, and fiber content, the purchaser need not be misled in regard to true composition.

Molasses Feeds. (Less than 15 per Cent Protein.) Pages 33-34.

Many of the feeds in this group contain alfalfa as a base and are intended primarily as a feed for horses. Feeds of this character are Allneeda, Clover Leaf, H. & S., Arab Horse, June Pasture, King Corn, and Purina. They contained no inferior by-products. The average price asked for the preceding feeds was about $35 a ton, which is considerably higher than their composition justifies.

Other feeds in this group which contained screenings or other low-grade products were Butterfat, Climax, International Special Dairy, Purina Sweet, and Hammond Horse.

Molassine Meal, an English product consisting of sphagnum moss and molasses, is now being extensively sold in New England. Experiments conducted at this station led us to conclude that from the standpoint of nutrition this product cannot be considered an economical feeding stuff. In many cases its value as a component of horse feeds seems to have been fully demonstrated.

The other brands here reported consist of whole crushed grains, molasses, and by-products of good quality.

III. Poultry Feeds.

Animal Products. Pages 36-37.

It has been demonstrated that fowls do best when a portion of the protein in their ration is furnished through the medium of animal foods. As mineral matter such as lime, phosphoric acid, and other necessary elements can be furnished more cheaply in other forms, the best sources of animal food for poultry are those which furnish the largest proportion of pure proteids for the least money. For this reason a good quality of meat scraps free from taint, or an excessive amount of bone is to be preferred to meat and bone meals, which, while furnishing an abundance of mineral elements, are relatively expensive. A careful study of the analytical data will furnish valuable information to the poultryman in regard to the best grades of meat scraps.

Fish meals are being quite extensively offered and are found as an ingredient of many prepared poultry mashes. They may be composed of the waste from the manufacture of fish glue, the trimmings from the preparation of cured fish for market, or the so-called fish pomace (derived from the menhaden after the extraction of oil). It is not believed that when fed in moderation they will impart an unpleasant flavor to either flesh or eggs. They should form a desirable source of protein for poultry. They are particularly rich in mineral matter, being composed almost entirely of proteids and bone, and are quite free from fat.

Alfalfa Meals.
Page 38.

Alfalfa meal is used extensively in the feeding of poultry both as a substitute for green feed during the winter months and in the ration of fowls not kept on range. Its indiscriminate use in mashes or in the poultry ration cannot be considered economical at prevailing prices. During the summer months especially, other sources of green feed are to be found that effect a considerable saving.

The alfalfa meals collected varied widely in composition. The best sample collected was the so-called "Chickalfa", an especially prepared product free from the tough woody stems. This sample contained a very high percentage of protein and a correspondingly low percentage of crude fiber.

Poultry Mashes and Meals.
Pages 39-44.

There is probably no branch of the feed business that yields better returns than the preparation and sale of poultry mashes as evidenced by the collection of over 50 brands by the inspector. It would certainly prove economical for the large consumer to purchase the individual feeding stuffs that he considers necessary to give the best results and to mix the mash at home, rather than to depend upon the ready-to-use mashes for which he must pay a price considerably in advance of that asked for their several components. An extra advantage in home mixing is the fact that the poultryman will be able to vary his ration according to the season, and at times substitute for the more expensive alfalfa and meat scraps other material at a considerable saving in cost. The average price asked for the prepared mashes was $2.05 a hundred. It is believed, at the average prices prevailing during the past season, that fully as satisfactory a home-mixed mash could have been produced at a saving of at least 25 cents a hundred.

FEEDING STUFFS DEFINITIONS.

The following definitions for commercial feeding stuffs have been adopted by the Association of Feed Control Officials, a national organization whose membership includes practically all of the officials engaged in feeding stuffs control. While it is believed that these definitions are in the main correct, changes are possible in the light of further investigation.

Meal is the clean, sound, ground product of the entire grain, cereal or seed which it purports to represent.

Chop is a ground or chop feed composed of one or more different cereals or by-products thereof. If it bears a name descriptive of the kind of cereals, it must be made exclusively of the entire grains of those cereals.

Screenings are the smaller imperfect grains, weed seeds and other foreign material having feeding value, separated in cleaning the grain.

Flax Plant By-Product is that portion of the flax plant remaining after the separation of the seed, the baste fiber and a portion of the shives, and consists of flax shives, flax pods, broken and immature flax seeds and the corticle tissue of the stem.

Alfalfa Meal is the entire alfalfa hay ground, and does not contain an admixture of ground alfalfa straw or other foreign materials.

Linseed Meal is the ground residue after extraction of part of the oil from ground flaxseed.

Blood Meal is ground dried blood.

Meat Scrap and Meat Meal are the ground residues from animal tissue exclusive of hoof and bone. If they contain any considerable amount of bone, they must be designated *Meat* and *Bone Scrap*, or *Meat* and *Bone Meal*. If they bear a name descriptive of their kind, composition or origin, they must correspond thereto.

Digester Tankage is the residue from animal tissue exclusive of hoof and horn specially prepared for feeding purposes by tanking under live steam, drying under high heat, and suitable grinding. If it contains any considerable amount of bone, it must be designated *Digester Meat and Bone Tankage.*

Cracklings are the residue after partially extracting the fats and oils from the animal tissue. If they bear a name descriptive of their kind, composition or origin, they must correspond thereto.

Brewers' Dried Grains are the properly dried residue from cereals obtained in the manufacture of beer.

Distillers' Dried Grains are the dried residue from cereals obtained in the manufacture of alcohol and distilled liquors. The product shall bear the designation indicating the cereal predominating.

Malt Sprouts are the sprouts of the barley grain. If the sprouts are derived from any other malted cereal, the source must be designated.

Buckwheat Shorts or Buckwheat Middlings are that portion of the buckwheat grain immediately inside of the hull after separation from the flour.

Rice Bran is the cuticle beneath the hull.

Rice Hulls are the outer chaffy coverings of the rice grain.

Rice Polish is the finely powdered material obtained in polishing the kernel.

Oat Groats are the kernels of the oats berry with the hulls removed.

Oat Hulls are the outer chaffy coverings of the oat grain.

Oat Middlings are the floury portion of the oat groat obtained in the milling of rolled oats.

Oat Shorts are the covering of the oat grain lying immediately inside the hull, being a fuzzy material carrying with it considerable portions of the fine floury part of the groat obtained in the milling of rolled oats.

Clipped Oat By-Product (term oat clippings not recognized) is the resultant by-product obtained in the manufacture of clipped oats. It may contain light, chaffy material broken from the ends of the hulls, empty hulls, light, immature oats and dust. It must not contain an excessive amount of oat hulls.

Corn Bran is the outer coating of the corn kernel.

Corn Feed Meal is the sifting obtained in the manufacture of cracked corn and table meal made from the whole grain.

Corn Germ Meal is a product in the manufacture of starch, glucose and other corn products and is the germ layer from which a part of the corn oil has been extracted.

Grits are the hard, flinty portions of Indian corn without hulls and germ.

Hominy Meal, Hominy Feed, or Hominy Chop is a mixture of the bran coating, the germ and a part of the starchy portion of the corn kernel obtained in the manufacture of hominy grits for human consumption.

Corn Gluten Meal is that part of commercial shelled corn that remains after the separation of the larger part of the starch, the germ and the bran by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

Corn Gluten Feed is that portion of commercial shelled corn that remains after the separation of the larger part of the starch and the germ by the processes employed in the manufacture of cornstarch and glucose. It may or may not contain corn solubles.

Cottonseed Meal is a product of the cottonseed only, composed principally of the kernel with such portion of the hull as is necessary in the manufacture of oil; provided that nothing shall be recognized as cottonseed meal that does not conform to the foregoing definition and that does not contain at least 36 per cent of protein.

Choice Cottonseed Meal must be finely ground, not necessarily bolted, perfectly sound and sweet in odor, yellow, free from excess of lint, and must contain at least 41 per cent of protein.

Prime Cottonseed Meal must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color, yellow, not brown or reddish, free from excess of lint, and must contain at least 38.6 per cent protein.

Good Cottonseed Meal must be finely ground, not necessarily bolted, of sweet odor, reasonably bright in color and must contain at least 36 per cent of protein.

Cottonseed Feed is a mixture of cottonseed meal and cottonseed hulls, containing less than 36 per cent of protein.

Cold Pressed Cottonseed is the product resulting from subjecting the whole undecorticated cottonseed to the cold pressure process for the extraction of oil, and includes the entire cottonseed less the oil extracted.

Ground Cold Pressed Cottonseed is the ground product resulting from subjecting the whole undecorticated cottonseed to the cold pressure process for the extraction of oil, and includes the entire ground cottonseed less the oil extracted.

Wheat Bran is the coarse outer coatings of the wheat berry obtained in the usual commercial milling process from wheat that has been cleaned and scoured.

Shorts or Standard Middlings are the fine particles of the outer and inner bran separated from bran and white middlings.

Wheat White Middlings or *White Middlings* are that part of the offal of wheat intermediate between shorts or standard middlings and red dog.

Shipstuff or Wheat Mixed Feed is a mixture of the products other than the flour obtained from the milling of the wheat berry.

Red Dog is a low grade wheat flour containing the finer particles of bran.

Wheat Bran with Mill Run Screenings is pure wheat bran plus the screenings which were separated from the wheat used in preparing said bran.

Wheat Bran with Screenings not Exceeding Mill Run is either wheat bran with the whole mill run of screenings or wheat bran with a portion of the mill run of screenings, provided that such portion is not an inferior portion thereof.

MARKET PRICES OF COMMERCIAL FEED STUFFS FOR 1913-1914.

FEED STUFFS	Average Monthly Wholesale Ton Prices—1913-1914.												Average
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mch.	April	May	June	July	Aug.	
Cottonseed Meal	$32.47	$32.40	$33.11	$32.90	$32.88	$34.13	$32.38	$33.20	$33.25	$33.25	$33.15	$32.53	$32.97
Linseed Meal (N. P. and O. P.)	33.25	31.75	31.50	32.40	31.38	31.88	31.94	32.00	32.32	32.25	32.80	33.38	32.24
Gluten Feed (Sacked)	31.32	30.20	29.80	30.77	31.33	31.35	30.96	30.55	29.20	29.45	29.40	31.72	30.50
Gluten Feed(Bulk)	29.95	28.40	28.15	28.92	29.92	29.75	29.32	29.05	27.81	28.10	28.15	30.55	29.01
Distillers' Dried Grains	34.50	34.00	34.00	34.50	34.50	—	33.75	34.00	32.50	34.50	—	—	34.03
Malt Sprouts	—	—	—	—	—	—	24.00	23.67	—	—	—	—	23.84
Flour Middlings (Red Dog)	31.25	30.00	29.50	29.35	29.44	30.50	30.75	30.70	30.25	30.50	30.65	32.75	30.47
Standard Middlings	29.16	28.38	27.22	27.40	27.75	27.94	29.07	29.05	28.22	27.82	27.70	28.94	28.22
Mixed Feed	31.03	27.90	27.28	27.70	28.28	28.60	30.00	29.79	29.03	28.44	27.00	28.94	28.67
Bran, Spring	25.82	24.35	24.38	25.30	26.42	27.38	29.63	27.75	26.89	24.63	23.05	25.88	25.96
Bran, Winter	26.25	25.50	25.44	26.00	27.00	27.63	30.13	29.30	27.88	25.13	23.10	26.00	26.61
Hominy Meal (sacked)	31.51	29.04	28.44	29.10	29.05	29.03	31.53	28.95	29.28	30.83	29.54	32.03	29.86
Hominy Meal (bulk)	29.89	27.24	26.90	27.46	27.45	27.75	27.48	27.55	27.58	29.61	28.40	31.20	28.21
Corn Meal	32.50	30.90	31.40	31.20	28.60	28.20	28.20	29.00	29.80	31.00	30.40	36.00	30.60
Corn, No. 2, yellow	30.64	28.92	30.25	30.71	27.14	26.82	27.68	27.43	28.50	29.37	28.46	34.28	29.18
Oats, No. 2, clipped white	31.38	29.82	29.31	29.81	29.00	28.81	29.38	28.94	29.63	29.88	28.25	31.88	29.67
Rye, No. 2	26.82	26.42	26.25	25.96	26.03	25.71	25.53	25.71	26.50	26.96	25.68	28.75	26.36
Feed Barley, (Standard)	31.04	28.34	27.46	26.34	25.71	26.13	26.25	25.00	25.04	25.02	24.46	27.38	26.51
Hay, No. 1, large bales	21.17	20.94	21.04	20.75	20.75	20.25	20.50	21.08	21.44	21.50	21.00	22.96	21.12
Hay, No. 2, large bales	19.38	19.34	19.28	18.85	19.25	18.51	18.63	19.30	19.71	19.75	19.55	21.26	19.40
Hay, No. 1, Clover mixed	16.75	17.00	18.13	18.50	18.50	17.94	17.69	17.60	18.00	17.25	16.70	18.50	17.71
Straw, choice rye	17.22	18.25	17.88	17.50	17.48	17.61	17.38	17.50	17.42	17.50	16.15	15.57	17.29
Straw, oat	10.38	10.50	10.38	10.50	10.38	10.25	10.25	10.25	10.25	10.75	10.15	9.50	10.30

CONTROL SERIES. BULLETIN NO. 2. DECEMBER, 1914.

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

INSPECTION OF Commercial Fertilizers

—BY—

H. D. HASKINS, L. S. WALKER, C. P. JONES and W. S. FROST.

This bulletin gives a detailed report of the fertilizer inspection for 1914. It states the number of fertilizers inspected, gives trade values of fertilizer ingredients, provides a summary showing average composition of unmixed fertilizing material as well as pound cost of each element of plant food furnished. Special attention is called to commercial shortages existing in both unmixed fertilizing materials and mixed goods. Particular emphasis is laid upon the economy of purchasing only high grade fertilizers. A summary table shows the general standing of each manufacturer's brands. A discussion is made of the quality of plant food found present in the mixed goods. A brief explanation of a vegetation experiment is made to show the efficiency of the alkaline permanganate method as an indication of the activity of water insoluble organic nitrogen. A summary table shows the general quality of nitrogen found in each manufacturer's product. Mention is made of the number and nature of the lime products analyzed. Tables of analyses give the detailed composition of all fertilizers and lime products sold in the state. A brief statement of a field experiment is given to show the actual crop producing power of the "New Mineral Fertilizer" and other stonemeal products. Commercial valuations of the plant food in all fertilizing materials, calculated from the table of trade values, are published, and for the lime compounds, the actual cost of 100 pounds of calcium and magnesium oxide is given in each case.

Requests for bulletins should be addressed to the
AGRICULTURAL EXPERIMENT STATION,
AMHERST, MASS.

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

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DEPARTMENT OF PLANT AND ANIMAL CHEMISTRY.

J. B. Lindsey, *Chemist.*

INSPECTION OF COMMERCIAL FERTILIZERS

FOR THE SEASON OF 1914.

By H. D. Haskins, *Chemist in Charge.*
Assisted by
L. S. Walker, C. P. Jones and W. S. Frost.

Manufacturers and Brands.

During the season of 1914, 110 manufacturers, importers and dealers, including the various branches of the large corporations, have secured certificates for the sale of 564 different brands of fertilizer, agricultural chemicals, raw products and agricultural limes in the Massachusetts markets. They may be classed as follows:

Complete fertilizers	366
Fertilizers furnishing phosphoric acid and potash	11
Ground bone, tankage and dry ground fish	56
Chemicals and organic nitrogen compounds	98
Agricultural limes	33
	564

Following will be found an alphabetical list of those who have registered fertilizers and lime compounds for sale in the state during 1914, together with brands registered by each.

W. H. Abbott, Holyoke, Mass.

Abbott's Animal Fertilizer,
Abbott's Eagle Brand Fertilizer,
Abbott's Onion Brand,
Abbott's Tobacco Fertilizer.

Alphano Humus Co., Whitehall Building, New York City.

Prepared Alphano Humus.

The American Agricultural Chemical Co., 92 State St., Boston, Mass.

Bradley's Complete Manure for Corn and Grain,
Bradley's Complete Manure for Potatoes and Vegetables,
Bradley's Complete Manure for Top Dressing Grass and Grain,
Bradley's Complete Manure with 10% Potash,
Bradley's Corn Phosphate,
Bradley's Eclipse Phosphate for All Crops,
Bradley's English Lawn Fertilizer,
Bradley's Green Mountain Special,
Bradley's High Grade Fertilizer with 10% Potash,
Bradley's High Grade Potato and Root Special,
Bradley's Niagara Phosphate,
Bradley's Potato Fertilizer,
Bradley's Potato Manure,
Bradley's XL Superphosphate of Lime,
Clark's Cove Bay State Fertilizer,
Clark's Cove Bay State Fertilizer, G. G.
Clark's Cove Great Planet Manure, A. A.
Clark's Cove Potato Fertilizer,
Clark's Cove Potato Manure,
Darling's Blood, Bone and Potash,

Darling's Complete 10% Manure,
Darling's Farm Favorite,
Darling's General Fertilizer,
Darling's Potato Manure,
Darling's Potato and Root Crop Manure,
East India A. A. Ammoniated Superphosphate,
Farquhar's Lawn and Garden Dressing,
Farquhar's Pure Ground Bone,
Farquhar's Vegetable and Potato Fertilizer,
Great Eastern Garden Special,
Great Eastern General Fertilizer,
Great Eastern Northern Corn Special,
Great Eastern Vegetable, Vine and Tobacco,
Pacific High Grade General Fertilizer,
Pacific Potato Special,
Soluble Pacific Guano,
Packer's Union Animal Corn Fertilizer,
Packer's Union Gardener's Complete Manure,
Packer's Union Potato Manure,
Packer's Union Universal Fertilizer,
Quinnipiac Corn Manure,
Quinnipiac Market Garden Manure,
Quinnipiac Phosphate,
Quinnipiac Potato Manure,
Quinnipiac Potato Phosphate,
Read's Farmer's Friend Superphosphate,
Read's High Grade Farmer's Friend Superphosphate,
Read's Practical Potato Special Fertilizer,
Read's Standard Superphosphate,
Read's Vegetable and Vine Fertilizer,
Standard Complete Manure,
Standard Fertilizer,
Standard Guano for All Crops,
Standard Special for Potatoes,
Wheeler's Connecticut Tobacco Grower,
Wheeler's Corn Fertilizer,
Wheeler's Havana Tobacco Grower,
Wheeler's Potato Manure,
Williams and Clark's Americus Ammoniated Bone Superphosphate,
Williams and Clark's Americus Corn Phosphate,
Williams and Clark's Americus High Grade Special for Potatoes and Vegetables,
Williams and Clark's Americus Potato Manure,
Williams and Clark's Potato Phosphate,
Williams and Clark's Prolific Crop Producer,
Williams and Clark's Royal Bone Phosphate for All Crops,
A A Potato Grower,
Church's Fish and Potash "D",
Complete Tobacco Manure,
Dissolved Bone Black,
Double Manure Salt,
Dry Ground Fish,
Fine Ground Bone,
Fine Ground Nova Scotia Plaster,
First Year Top Dressing,
Flour of Bone,
Genuine German Kainit,
Grass and Lawn Top Dressing,
Grass and Oats Fertilizer,
Ground Tankage (4.94% Nitrogen),
Ground Tankage (7.41% Nitrogen),
High Grade Dried Blood,
High Grade Fertilizer with 10% Potash,
High Grade Sulphate of Potash,
Muriate of Potash,
Nitrate of Soda,
Northwestern Empire Special Manure,
Plain Superphosphate 12%,
Plain Superphosphate 14%,
Plain Superphosphate 16%,
Special Grass and Garden Mixture,
Sulphate of Ammonia,
Thomas Phosphate Powder, (Basic Slag),
Top Dressing for Old Fields,
Tobacco Starter and Grower.

Armour Fertilizer Works, 930 Equitable Building, Baltimore, Maryland.

All Soluble,
Ammoniated Bone with Potash,
Bone, Blood and Potash,
Bone Meal,
Complete Potato,
Connecticut Valley Tobacco Grower,
Fish and Potash,
Fruit and Root Crop Special,
Grain Grower,
High Grade Potato,
Market Garden Fertilizer,
Muriate of Potash,
Nitrate of Soda,
Onion Special,
Special Corn Manure,
Special Value,
Star Phosphate.

Baugh & Sons Co., Philadelphia, Pa.

Baugh's Economical Truck Guano,

Baugh's Complete Animal Base Fertilizer,
Baugh's Grand Rapid High Grade Guano.

Beach Soap Co., Lawrence, Mass.

Beach's Advance Brand,
Beach's Fertilizer Bone,
Beach's Lawn Dressing,
Beach's Market Garden,
Beach's Reliance Brand,
Beach's Seeding Down Brand,
Beach's Top Dressing.

Beatey's Unadulterated Agricultural Phosphate Co., of New England, Boston, Mass.

Beatey's Natural Bone Phosphate of Lime Fertilizer.

Berkshire Fertilizer Co., Bridgeport, Ct.

Berkshire Ammoniated Bone Phosphate,
Berkshire Complete Fertilizer,
Berkshire Complete Tobacco Fertilizer,
Berkshire Cowls' Mixture,
Berkshire Double Sulfate of Potash,
Berkshire Dry Ground Fish,
Berkshire Economical Grass Fertilizer,
Berkshire Fish and Potash,
Berkshire Grass Special,
Berkshire Long Island Special,
Berkshire Muriate of Potash,
Berkshire Nitrate of Soda,
Berkshire Potato and Vegetable Phosphate,
Berkshire Precipitated Phosphate
Berkshire Sulfate of Potash,
Berkshire Tobacco Special with Carbonate of Potash.

Berkshire Hills Co., Sheffield, Mass.

Agricultural Lime.

E. E. Bisbee, 147 Pearl St., Boston, Mass.

Basic Slag Meal.

Chas. M. Bolles, East Pepperell, Mass.

Nissitissitt Plant Food.

Boston Fertilizer Co., Boston, Mass.

Boston Humus,
Boston Plant Life.

Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.

Bowker's Acid Phosphate,
Bowker's Ammoniated Food for Flowers,
Bowker's Blood, Bone and Potash,
Bowker's Bone and Wood Ash Fertilizer,
Bowker's Complete Alkaline Tobacco Grower (Potash from Sulphate),
Bowker's Corn Phosphate,
Bowker's Dried Blood,
Bowker's Dry Ground Fish,
Bowker's Early Potato Manure,
Bowker's Farm and Garden Phosphate,
Bowker's Fine Ground Bone Tankage,
Bowker's Fish and Potash, Square Brand,
Bowker's Fresh Ground Bone,
Bowker's Genuine German Kainit,
Bowker's Gloucester Fish and Potash,
Bowker's Grain and Grass Fertilizer,
Bowker's High Grade Fertilizer,
Bowker's High Grade Sulfate of Potash,
Bowker's Highly Nitrogenized Mixture,
Bowker's Hill and Drill Phosphate,
Bowker's Lawn and Garden Dressing,
Bowker's Market Garden Fertilizer,
Bowker's Muriate of Potash,
Bowker's Nitrate of Soda,
Bowker's Nova Scotia Land Plaster,
Bowker's Onion Fertilizer (Potash from Sulphate),
Bowker's Potato and Vegetable Fertilizer,
Bowker's Potato and Vegetable Phosphate,
Bowker's Pulverized Sheep Manure,
Bowker's Pure Unleached Canada Hardwood Ashes,
Bowker's Soluble Animal Fertilizer,
Bowker's Sulfate of Ammonia,
Bowker's Sure Crop Phosphate,
Bowker's Thomas Phosphate Powder, (Basic Slag),
Bowker's Tobacco Ash Elements, (Potash from Sulfate),
Stockbridge Special Complete Manure for Corn and All Grain Crops,
Stockbridge Special Complete Manure for Potatoes and Vegetables,
Stockbridge Special Complete Manure for Seeding Down, Permanent Dressing and Legumes, (Potash from Sulfate),
Stockbridge Special Complete Manure for Top Dressing and Forcing,
Stockbridge Tobacco Manure, (Potash from Sulfate),

Joseph Breck & Sons Corporation, 51-52 North Market St., Boston, Mass.

Breck's High Grade Hardwood Ashes,
Breck's Lawn and Garden Dressing,
Breck's Market Garden Manure,
Breck's Ram's Head Brand Sheep Manure.

F. W. Brode & Co., 40 S. Front St. Memphis, Tenn.

Owl Brand Cottonseed Meal.

Benj. W. Brown Co., Concord, Mass.

Nitrate of Soda.

The Buckeye Cotton Oil Co., Cincinnati, Ohio.

"Buckeye" Cottonseed Meal.

Carters Tested Seeds, Inc., Boston, Mass.

Carters Anti-Clover Grass Manure No. 2,
Carters Complete Grass Manure No. 1,
Carters General Purpose Grass No. 3,
Carters Worm Eradicating Fertilizer.

Cheshire Lime Manufacturing Co., Cheshire, Mass.

Cheshire Agricultural Lime,
Cheshire Ground Limestone.

The E. D. Chittenden Co., Bridgeport, Conn.

Chittenden's Complete Tobacco and Onion Grower,
Chittenden's Fish and Potash Special Formula,
Chittenden's Grain and Vegetable,
Chittenden's Grass and Grain,
Chittenden's Ground Bone,
Chittenden's Potato and Grain,
Chittenden's Potato Special,
Chittenden's 10% Potash,
Chittenden's Tobacco Special.

Clark Refining Co., Inc., 75 State St., Boston, Mass.

Farmers' Friend Liquid Fertilizer.

Clay & Sons, Stratford, London, Eng.

Clay's Fertilizer.

The Coe-Mortimer Co., 51 Chambers St., New York City.

E. Frank Coe's Blood, Bone and Potash,
E Frank Coe's Celebrated Special Potato Fertilizer,
E. Frank Coe's Columbian Corn and Potato Fertilizer,
E. Frank Coe's Complete Manure with 10% Potash,
E. Frank Coe's Connecticut Wrapper Grower,
E Frank Coe's Double Strength Potato Manure.
E. Frank Coe's Double Strength Top Dressing,
E. Frank Coe's Excelsior Potato Fertilizer,
E. Frank Coe's Extra Special Potato Fertilizer and Fruit Grower,
E. Frank Coe's Famous Prize Brand Grain and Grass Fertilizer,
E. Frank Coe's Gold Brand Excelsior Guano,
E. Frank Coe's Ground Tankage (4.94% Nitrogen),
E. Frank Coe's Ground Tankage (9-20 Grade),
E. Frank Coe's High Grade Ammoniated Superphosphate,
E. Frank Coe's High Grade Soluble Phosphate,
E. Frank Coe's Ideal Tobacco Fertilizer,
E. Frank Coe's New Englander Corn and Potato Fertilizer,
E. Frank Coe's Red Brand Excelsior Guano (For Market Gardening),
E. Frank Coe's Special Grass Top Dressing,
E. Frank Coe's Standard Potato Fertilizer,
E. Frank Coe's Tobacco and Onion Fertilizer,
E. Frank Coe's XXV Ammoniated Phosphate,
E. Frank Coe's XXX Fine Ground Bone,
E. Frank Coe's 12% Superphosphate,
High Grade Dried Blood,
High Grade Sulfate of Potash,
Muriate of Potash,
Nitrate of Soda,
Thomas Phosphate Powder (Basic Slag Phosphate).

F. E. Conley Stone Co., Utica, N. Y.

Raw Ground Lime.

Consumers Fertilizer Co., 42nd St. & Broadway, New York City.

"Mak Gro" Odorless Plant Food.

J. A. Creighton, & Co., Thomaston, Maine.

Creighton's Agricultural Lime.

S. P. Davis, Little Rock, Ark.

Good Luck Brand Cottonseed Meal.

Dexter Lime Rock Co., Lime Rock, Rhode Island.

Ground Limestone,
Slaked Lime.

John C. Dow Company, 13-14 Chatham St., Boston, Mass.

Dow's Pure Ground Bone.

The Eastern Chemical Co., 37 Pittsburg St., Boston, Mass.

I M P Plant Food.

The Edison Portland Cement Co., Stewartsville, N. J.

Edison Pulverized Limestone.

R. & J. Farquhar & Co., Boston, Mass.

Pulverized Sheep Manure.

Essex Fertilizer Co., 39 North Market St., Boston, Mass.

Essex Complete Manure for Corn, Grain and Grass,
Essex Complete Manure for Potatoes, Roots and Vegetables,
Essex Dry Ground Fish,
Essex Grass and Top Dressing for Lawns and Meadows,
Essex Ground Bone,
Essex Market Garden & Potato Manure,
Essex Potato Grower with 10% Potash,
Essex Special Corn Fertilizer,
Essex Special Potato Phosphate for Potatoes and Roots,
Essex Special Tobacco Manure,
XXX Fish and Potash for All Crops.

Farnam Cheshire Lime Co., Farnams, Mass.

Agricultural Lime.

German Kali Works, New York City.

Kainit,
Muriate of Potash,
Sulfate of Potash.

John Glennie, Ward Hill, Mass.

Complete Fertilizer.

The Grangers Lime & Marble Co., West Stockbridge, Mass.

Ground Raw Limestone.

Green Mountain Lime Co., Middlebury, Vt.

Green Mountain Lime.

Thomas Hersom & Co., New Bedford, Mass.

Hersom's Neverfail,
Pure Bone Meal,
Meat and Bone.

A. W. Higgins, Westfield, Mass.

Acid Phosphate,
Cottonseed Meal,
Cyanamid,
Dry Ground Fish,
Nitrate of Soda.

Home Soap Co., Worcester, Mass.

Pure Ground Bone.

The Hoosac Co., North Adams, Mass.

Ground Limestone.

Hoosac Valley Lime and Marble Co., Adams, Mass.

Adams Agricultural Lime,
Adams Lime Ashes.

Hudson Carbon Co., Ballston Spa, N. Y.

Davidge's Special Phosphorus.

Humphreys-Godwin Co., Memphis, Tenn.

Dixie Brand Cottonseed Meal,
High Grade Cottonseed Meal, (7.75% Nitrogen),
Topsy Dark Cottonseed Meal.

International Agricultural Corporation, Buffalo Fertilizer Works, Branch, Buffalo, N. Y.

Buffalo Onion Formula,
Buffalo Tobacco Producer,
Buffalo Two-Eight-Ten,
Bone Meal,
Dry Ground Fish,
Farmer's Choice,
High Grade Manure,
Muriate of Potash,
New England Special,
Nitrate of Soda,
16% Acid Phosphate,

Sulfate of Potash,
Top Dresser,
Vegetable and Potato.

Johnson Seed Potato Co., Leominster, Mass.

Ideal Potato Manure(Planting Brand),
Ideal Potato Manure (Top Dressing Brand).

John Joynt, Lucknow, Ontario,Canada.

Canada Unleached Hardwood Ashes.

Lister's Agricultural Chemical Works, Newark, N. J.

Lister's Celebrated Onion Fertilizer,
Lister's Complete Tobacco Manure,
Lister's Grain and Grass Fertilizer,
Lister's High Grade Special for Spring Crops,
Lister's Potato Manure,
Lister's Pure Ground Bone Meal,
Lister's Special Corn Fertilizer,
Lister's Special Potato Fertilizer,
Lister's Special Tobacco Fertilizer,
Lister's Standard Grass Fertilizer,
Lister's Success Fertilizer,
Lister's 10% Potato Grower,
Fine Ground Nova Scotia Land Plaster,
Nitrate of Soda.

Lowell Fertilizer Co., 40 North Market St., Boston, Mass.

Lowell Acid Phosphate, (12%),
Lowell Acid Phosphate, (14%),
Lowell Animal Brand, Complete for All Crops,
Lowell Apple Tree Special,
Lowell Basic Slag,
Lowell Bone Fertilizer for Corn, Grain, Grass and Vegetables,
Lowell Corn and Vegetables,
Lowell Dissolved Bone and Potash,
Lowell Empress Brand for Corn, Potatoes and Grain,
Lowell Lawn Dressing,
Lowell Market Garden Manure,
Lowell Potato Grower with 10% Potash,
Lowell Potato Manure,
Lowell Potato Phosphate,
Lowell Seeding Down Fertilizer,
Lowell Special Grass Mixture, for Top Dressing and Lawns,
Lowell Special Potato Fertilizer with 10% Potash,
Lowell Sterling Phosphate,
Lowell Superior Fertilizer with 10% Potash,
Ground Bone,
High Grade Sulfate of Potash,
Muriate of Potash,
Nitrate of Soda,
Nova Scotia Land Plaster,
Sulfate of Ammonia,
Tankage.

James E. McGovern, Andover, Mass.

Andover Animal Fertilizer.

Mapes Formula and Peruvian Guano Co., 143 Liberty St., New York City.

Mapes' Average Soil Complete Manure,
Mapes' Cauliflower and Cabbage Manure,
Mapes' Cereal Brand,
Mapes' Complete Manure for General Use,
Mapes' Complete Manure 10% Potash,
Mapes' Corn Manure,
Mapes' Dissolved Bone,
Mapes' Economical Potato Manure,
Mapes' Fruit and Vine Manure,
Mapes' Grass and Grain Spring Top Dressing,
Mapes' Lawn Top Dressing,
Mapes' Potato Manure,
Mapes' Tobacco Ash Constituents,
Mapes' Tobacco Manure, Wrapper Brand,
Mapes' Tobacco Starter, Improved,
Mapes' Top Dresser, Improved, Full Strength,
Mapes' Top Dresser, Improved, Half Strength,
Mapes' Vegetable or Complete Manure for Light Soils.

Marl Products Co., Barton, Vt.

Marl.

Geo. E. Marsh Co., Lynn, Mass.

Marsh's Pure Ground Bone.

W. L. Mitchell, New Haven, Conn.

Lime Kiln Ashes.

The Mitchell Fertilizer Co., Tremley, N. J.

Mitchell's Vegetable Fertilizer.

Geo. L. Munroe & Sons, Oswego, N. Y.

Pure Unleached Wood Ashes.

National Fertilizer Co., 92 State St., Boston, Mass.

Chittenden's Ammoniated Bone Phosphate,
Chittenden's Complete Grass Fertilizer,
Chittenden's Complete Root and Grain Fertilizer,
Chittenden's Complete Tobacco Fertilizer (Sulfate),
Chittenden's Connecticut Valley Tobacco Grower (Carbonate),
Chittenden's Connecticut Valley Tobacco Starter (Sulfate),
Chittenden's Eureka Potato Fertilizer,
Chittenden's Fine Ground Bone,
Chittenden's Fish and Potash,
Chittenden's High Grade Top Dressing,
Chittenden's High Grade Special Tobacco Fertilizer (Sulfate),
Chittenden's Market Garden Fertilizer,
Chittenden's Potato Phosphate,
Chittenden's Premium Tobacco Grower,
Chittenden's Plain Superphosphate, 12%,
Chittenden's Plain Superphosphate, 14%,
Chittenden's Tobacco Special with Carbonate of Potash,
Chittenden's Tobacco Special with Sulfate of Potash,
Chittenden's XXX Fish and Potash.

Natural Guano Co., Aurora, Ill.

Sheep's Head Pulverized Sheep Manure.

New England Fertilizer Co., 40A North Market St., Boston, Mass.

New England Complete Manure with 10% Potash,
New England Corn and Grain Fertilizer,
New England Corn Phosphate,
New England High Grade Potato Fertilizer,
New England High Grade Special with 10% Potash,
New England Market Garden Manure,
New England Potato Fertilizer,
New England Potato Grower with 10% Potash,
New England Special Onion Grower,
New England Superphosphate for All Crops,
New England Tobacco Grower.

New England Lime Co., Danbury, Conn.

Adams (Mass.) Agricultural Lime,
Adams (Mass.) Fresh Burned Granulated Lime,
Adams (Mass.) Lime Ashes,
Canaan (Conn.) Lime Ashes,
Connecticut Agricultural Lime.

New Mineral Fertilizer Co., Boston, Mass.

The New Mineral Fertilizer.

Nitrate Agencies Co., 28 Bridge St., New York City.

Acid Phosphate,
Basic Slag,
Dried Blood,
Dried Blood (12% Ammonia),
Ground Bone,
Ground Tankage,
High Grade Acid Phosphate,
Nitrate of Soda.

Olds & Whipple, Hartford, Conn.

Olds & Whipple's Agricultural Lime,
Olds & Whipple's Castor Pomace,
Olds & Whipple's Complete Grass Fertilizer,
Olds & Whipple's Complete Corn and Potato,
Olds & Whipple's Complete Onion Fertilizer,
Olds & Whipple's Complete Tobacco Fertilizer,
Olds & Whipple's Cottonseed Meal,
Olds & Whipple's Double Manure Salts,
Olds & Whipple's Dry Ground Fish,
Olds & Whipple's High Grade Potato Fertilizer,
Old's & Whipple's Potash and Bone Phosphate,
Olds & Whipple's Special Onion Fertilizer.

Carroll S. Page, Hyde Park, Vt.

Raw Ground Bone.

Parmenter & Polsey Fertilizer Co., 40 N. Market St., Boston, Mass.

Parmenter & Polsey A. A. Brand,
Parmenter & Polsey Aroostook Special with 10% Potash,
Parmenter & Polsey Ground Bone,

Parmenter & Polsey Maine Potato Fertilizer with 10% Potash,
Parmenter & Polsey Plymouth Rock Brand for All Crops,
Parmenter & Polsey Potato Fertilizer,
Parmenter & Polsey Potato Grower with 10% Potash,
Parmenter & Polsey Special Potato Fertilizer for Potatoes and Root Crops,
Parmenter & Polsey Star Brand Superphosphate.

R. T. Prentiss, Granby, Mass.

R. T. Prentiss Complete for All Crops,
R. T. Prentiss Complete Top Dressing.

Pulverized Manure Co., Chicago, Ill.

Wizard Brand Cattle Manure,
Wizard Brand Sheep Manure.

Rockland & Rockport Lime Co., Rockland, Me.

Pine Cone Hydrated Lime,
R. R. Land Lime.

The Rogers Manufacturing Co., Rockfall, Conn.

All Round Fertilizer,
Complete Potato and Vegetable,
High Grade Corn and Onion,
High Grade Grass and Grain,
High Grade Oats and Top Dressing,
High Grade Soluble Tobacco,
High Grade Sulfate of Potash,
High Grade Tobacco Grower,
High Grade Tobacco and Potato,
High Grade Tobacco Grower (with Sulfate of Potash),
Muriate of Potash,
New High Grade Tobacco Grower (Vegetable and Carbonate Formula),
Nitrate of Soda,
Pure Fine Ground Bone,
Pure Knuckle Bone Flour.

The Rogers & Hubbard Co., Middletown, Conn.

Hubbard's "Bone Base" All Soils-All Crops Phosphate,
Hubbard's "Bone Base" Complete Phosphate,
Hubbard's "Bone Base" Fertilizer for Seeding Down and Fruit,
Hubbard's "Bone Base" New Market Garden Phosphate,
Hubbard's "Bone Base" Oats and Top Dressing,
Hubbard's "Bone Base" Potato Phosphate,
Hubbard's "Bone Base" Soluble Corn and General Crops,
Hubbard's "Bone Base" Soluble Tobacco Manure,
Hubbard's "Bone Base" Soluble Potato Manure,
Bone Flour,
Strictly Bone,
Tobacco Special.

Ross Bros. Co., 88 Front St., Worcester, Mass.

Corn, Grass and Grain Fertilizer,
High Grade Potato Fertilizer,
High Grade Potato and Vegetable Fertilizer,
Spring Grass Top Dressing,
Worcester Special Lawn Dressing.

F. S. Royster Guano Co., Baltimore, Md.

Royster's Champion Crop Compound,
Royster's Complete Potato Manure,
Royster's Gold Seal Potato and Cabbage Special,
Royster's High Grade Tobacco Manure,
Royster's Ideal Tobacco Guano,
Royster's Imperial Formula,
Royster's Practical Truck Grower,
Royster's Special Corn and Tomato Guano.

J. W. Sanborn, Pittsfield, N. H.

Prof. Sanborn's Fertilizer for Grass and Grain,
Prof. Sanborn's Fertilizer for Hill or Drill,
Prof. Sanborn's Fertilizer for Potatoes and Corn.

Sanderson Fertilizer & Chemical Co., New Haven, Conn.

Sanderson's Atlantic Coast Bone, Fish and Potash,
Sanderson's Complete Tobacco Grower,
Sanderson's Corn Superphosphate,
Sanderson's Fine Ground Fish,
Sanderson's Formula A,
Sanderson's Formula B,
Sanderson's High Grade Sulfate of Potash,
Sanderson's Muriate of Potash,

Sanderson's Nitrate of Soda,
Sanderson's Plain Superphosphate,
Sanderson's Potato Manure,
Sanderson's Special with 10% Potash,
Sanderson's Thomas Phosphate Powder,
Sanderson's Top Dressing for Grass and Grain.

M. L. Shoemaker & Co., Ltd., Philadelphia, Pa.

"Swift-Sure" Bone Meal,
"Swift-Sure" Superphosphate for Tobacco and General Use.

A. M. Smith & Co., Boston, Mass.

Equity Brand Dry Ground Hen Manure.

J. E. Soper Co., 206 Chamber of Commerce, Boston, Mass.

Pilgrim Cottonseed Meal,
Pioneer Cottonseed Meal.

Springfield Rendering Co., Springfield, Mass.

Springfield Animal Fertilizer,
Springfield Ground Bone,
Springfield High Grade Tankage,
Springfield Special Potato and Vegetable Fertilizer.

Thomas L. Stetson, Randolph, Mass.

Pure Ground Bone.

Charles Stevens, Napanee, Ontario, Canada.

"Beaver Brand" Canada Unleached Hardwood Ashes.

The Stearns Lime Co., Danbury, Conn.

Ground Limestone for Soil Improvement.

Wm. Thomson & Sons., Ltd., Clovenfords, Scotland.

Thomson's Vine, Plant & Vegetable Manure,
Thomson's Special Chrysanthemum Manure.

The Tobey Lime Co., West Stockbridge, Mass.

Tobey Agricultural Lime.

20th Century Specialty Co., Boston, Mass.

"Scientific" 12 L. No. 1.

Union Seed & Fertilizer Co., New York City.

American Red Tag Cottonseed Meal.

Vermont Marl Co., Brattleboro, Vt.

Shell-Marl Land-Lime.

Virginia-Carolina Chemical Co., 24 Broad St., New York City.

V. C. C. Co's. Indian Brand for Tobacco (C. S. M. with Sulfate),
V. C. C. Co's. National Corn, Grain and Grass Top Dressing,
V. C. C. Co's. Owl Brand Potato and Truck Fertilizer,
V. C. C. Co's Tobacco and Onion Special (C. S. M. with Sulfate),
V. C. C. Co's. XXX Fish and Potash.

Charles Warner Co., Wilmington, Del.

Limoid (Hydrated Lime).

West Stockbridge Lime Co., West Stockbridge, Mass.

Agricultural Lime.

Whitman & Pratt Rendering Co., Lowell, Mass.

Whitman & Pratt's All Crop,
Whitman & Pratt's Corn Success,
Whitman & Pratt's Potato Manure,
Whitman & Pratt's Potato Special,
Whitman & Pratt's Pure Ground Bone,
Whitman & Pratt's Special Top Dresser,
Whitman & Pratt's Vegetable Grower,
Acid Phosphate,
Basic Slag Meal,
Muriate of Potash,
Nitrate of Soda,
Sulfate of Potash,
Tankage (5.34–13.73),
Tankage (7.40–9.15).

Wilcox Fertilizer Co., Mystic, Conn.

Wilcox Acid Phosphate,
Wilcox Basic Slag Meal,
Wilcox Complete Bone Superphosphate,
Wilcox Corn Special,
Wilcox Dry Ground Acidulated Fish,
Wilcox Dry Ground Fish Guano,
Wilcox Fish and Potash,
Wilcox 4-8-10 Fertilizer,
Wilcox Grass Fertilizer,
Wilcox High Grade Fish and Potash,
Wilcox High Grade Sulfate of Potash,
Wilcox High Grade Tobacco Special,

Wilcox High Grade Tankage,
Wilcox Kainit,
Wilcox Muriate of Potash,
Wilcox Nitrate of Soda,
Wilcox Potato Fertilizer,
Wilcox Potato, Onion and Vegetable Fertilizer,
Wilcox Pure Ground Bone,
Wilcox Special Superphosphate.

S. Winter Co., Brockton, Mass.

Pure Ground Bone.

Witherbee, Sherman & Co., Inc., Port Henry, N. Y.

Barium Phosphate.

A. H. Wood & Co., Framingham, Mass.

Wood's B. B. Fertilizer,
Wood's S. P. Fertilizer,
Wood's 777 Fertilizer.

J. M. Woodard, Greenfield, Mass.

Woodard Unground Tankage.

Worcester Rendering Co., Auburn, Mass.

Ground Tankage,
Royal Worcester Potato Fertilizer,
Royal Worcester Corn and Grain.

Collection of Fertilizers.

Mr. James T. Howard, our regular inspector, was in charge of the fertilizer collection for the season. He was assisted by Mr. J. A. Cunningham and Mr. C. A. Bradford. Most of the samples were procured between the dates of April 1st and May 29th. An effort was made to procure representative samples of every brand of fertilizer and lime registered in the state of Massachusetts. In the few cases where representative samples were not found an invitation was given to the manufacturer to send us a certified representative sample of the brand. These will appear in the bulletin as manufacturer's samples. Whenever possible duplicate samples have been procured of the same brand taken in various parts of the state, and the custom has been followed of making an analysis of the composite sample composed of equal weights of the various samples taken in different localities. This insures the obtaining of analytical data on a larger tonnage than would be possible if only one sample of a brand were analyzed. From data collected by our inspectors 7,437 tons of fertilizer were sampled. To obtain adequate samples from this tonnage it was necessary to sample about 18,750 different sacks. Of the complete fertilizers sampled 69 per cent of the total tonnage were high grade fertilizers, (valued over $24.00 a ton), 17 per cent were medium grade, (valued between $18.00 and $24.00 a ton), and 14 per cent were low grade, (valued less than $18.00 a ton).

During the late fall and early winter large shipments of cottonseed meal, wood ashes and lime compounds are delivered to farmers who buy these products early so as to move them more conveniently before the rush of the spring work. It has been our custom, which we hope to continue, to sample and analyze such shipments upon call, simply making a nominal charge to cover the cost of procuring the sample. Wherever a party desiring the analysis is located too far from the experiment station to warrant sending an inspector to sample the goods, a sampling tube will be sent by express together with instructions in regard to the proper method of using same. All samples procured in this way will be analyzed and reported as soon as circumstances permit, and wherever the analysis falls below the guarantee, in case a request is made, commercial shortages will be figured and reported with the analysis. These may be used as a basis for settlement.

During the season of 1914, 135 towns were visited, 1,307 samples, representing 606 distinct brands, were drawn from stock found in the possession of 365 different agents. This represents 8 more samples and 35 more brands than were taken during the previous year.

Fertilizers Analyzed.

Seven hundred and eighty-one analyses, (603 distinct brands) have been made during the year's inspection. They are as follows:

Complete Fertilizers	453
Fertilizers furnishing phosphoric acid and potash	18
Ground bone, tankage and dry ground fish	79
Nitrogen compounds	105
Potash compounds	43
Phosphoric acid compounds	40
Lime compounds	43
	781

Trade Values of Fertilizing Ingredients.

The following table of trade values represents the average cost per pound at retail for the six months preceding March 1, 1914, of nitrogen, potash and phosphoric acid, as furnished by high grade chemicals and standard unmixed fertilizing material in the large markets in New York and New England. They represent the average wholesale quotations on chemicals and raw products which appeared in the various trade journals from September 1, 1913 to March 1, 1914, plus about 20 per cent. These trade values were adopted at a meeting of representatives of experiment stations of New England, New York and New Jersey held during the first week in March, 1914. These values have served as a basis of valuing the fertilizers and crude stock materials reported in this bulletin.

	Cents per pound.	
Nitrogen.	1913	1914
In ammonia salts	18.5	16.5
In nitrates	18.5	16.5
Organic nitrogen in dry and fine ground fish, blood and meat	20.	22.5
Organic nitrogen in fine* bone and tankage	19.	21.5
Organic nitrogen in coarse*bone and tankage	15.	17.5
Organic nitrogen in mixed fertilizers	19.	19.5
Organic nitrogen in cottonseed meal, castor pomace, linseed meal, etc.	20.	22.5

Phosphoric Acid.		
Soluble in water	4.5	4.5
Soluble in neutral ammonium citrate solution (reverted phosphoric acid)**	4.	4.
In fine* ground bone and tankage	4.	4.
In coarse* bone, tankage and ashes	3.5	3.5
In cottonseed meal, castor pomace and linseed meal	4.	4.
Insoluble (in neutral ammonium citrate solution) in mixed fertilizers	2.	2.
Potash.		
As sulfate free from chlorides	5.25	5.
As muriate (chloride)	4.25	4.
As carbonate	8.	8.
In cottonseed meal, castor pomace, linseed meal, etc	5.	5.

RAW PRODUCTS AND CHEMICALS.

Ground Bone. Fifty-two samples of ground bone, represented by 35 analyses, have been inspected during the season. The average retail cash price for ground bone has been $33.11 and the average calculated commercial valuation $31.23 per ton. Ground bone has averaged 2.97 per cent nitrogen, 76.10 per cent of which has been found active by the alkaline permanganate method. Seven brands were found deficient in nitrogen and 9 in phosphoric acid. Five brands have shown a commercial shortage of over fifty cents per ton. They are as follows:

American Agricultural Chemical Co., No. 668-958. Nitrogen found 2.19%, guaranteed 2.47%; phosphoric acid found 22.14%, guaranteed 22.88%. No. 616, nitrogen found 2.39%, guaranteed 2.47%; phosphoric acid 20.56%, guaranteed 22.88%.

Coe–Mortimer Co., No. 1121. Nitrogen found 2.66%, guaranteed 2.47%; phosphoric acid found 17.45%, guaranteed 22.88%. Another sample of this same brand collected in another part of the state at the request of the manufacturer tested well up to the minimum guarantee in both constituents.

The Rogers & Hubbard Co., No. 827. Nitrogen found 3.63%, guaranteed 3.70%; phosphoric acid found 20.79%,guaranteed 22.00%.

S. Winter Co., No. 843. Nitrogen found 2.28%, guaranteed 3.25%; phosphoric acid found 27.71%, guaranteed 24.15%.

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* Fine bone and tankage are separated from coarse bone and tankage by means of a sieve having circular openings 1-50 of an inch in diameter. Valuations of bone and tankage are based upon degree of fineness as well as upon composition.

** Dissolved by a neutral solution of ammonium citrate, sp. gr. 1.09, in accordance with method adopted by the Association of Official Agricultural Chemists.

Ground Tankage. Twenty-four samples of tankage have been inspected, necessitating 17 analyses. They were found well up in phosphoric acid and only three of the samples were found deficient in nitrogen. The average retail cash price for tankage has been $33.19 and the average calculated commercial valuation $36.27 per ton. The average total nitrogen in tankage was 6.35 per cent, of which 75.75 per cent has been found active. Nitrogen in fine tankage has cost on the avergae 19.68 cents; nitrogen in coarse tankage has cost 16.01 cents per pound. No commercial shortages of fifty cents per ton were noted.

Dissolved Bone. Four analyses of dissolved bone have been made and the guarantees were found well maintained. The average retail cash price has been $28.00 and the average calculated commercial valuation $26.70 per ton. The average per cent of nitrogen in this product was 3.34, 76.35 per cent of which was found in active form.

Dry Ground Fish. Thirty-nine samples of dry ground fish were inspected,necessitating 16 analyses. Three were found deficient in nitrogen and 2 in phosphoric acid. The average retail cash price has been $47.56 and the average calculated commercial valuation $41.92 per ton. The product has averaged 8.01 per cent total nitrogen, about 73.00 per cent of which has been found active. Nitrogen from fish has cost on the average 25.5 cents per pound. No commercial shortages of fifty cents per ton were noted.

Dried Blood. Eight analyses of dried blood have been made. Three were found deficient in nitrogen. In two cases the nitrogen deficiency was made up by phosphoric acid so that only one commercial shortage of over fifty cents per ton was noted. The average per cent of nitrogen found in dried blood was 10.43, 76.61 per cent of which was found active by laboratory methods. The average per cent of phosphoric acid in dried blood was 3.91, the highest amount found being 7.36 per cent. The average retail cash price for blood has been $47.33 and the average calculated commercial valuation $49.93 per ton. The average pound cost of nitrogen from this source has been 22.69 cents. One sample of dried blood showed a commercial shortage of over fifty cents per ton.

Nitrate Agencies Co., No. 534. Nitrogen found 10.60%, guaranteed 13.16%.

Castor Pomace. Only one sample of castor pomace was analyzed. The nitrogen guarantee was well maintained. The cash price per ton was $25.00; the average calculated commercial valuation $23.63. The cost of nitrogen, therefore, based upon the single cash price furnished was 23.8 cents per pound. The nitrogen, 5.25 per cent of which was found present, showed an activity of about 59 per cent.

Cottonseed Meal. Sixty-three samples of cottonseed meal have been examined. Most of these samples were collected by our inspectors during the winter months and upon call from purchaser. Each of the samples represents a carload and all the material was bought as a nitrogen source for tobacco. The average retail cash price for cottonseed meal has been $33.14 and the average calculated commercial valuation, based on the nitrogen content alone, has been $30.61 per ton. The average pound cost of nitrogen has been 24.37 cents. The average per cent of nitrogen in cottonseed meal has been 6.80 . The nitrogen in cottonseed meal shows an activity of about 56 per cent by laboratory methods. This is considerably less than the actual availability as shown by vegetation experiments, probably due to the large amounts of cellular material present. Seventeen samples showed a nitrogen deficiency. The following brands have shown a commercial shortage of over fifty cents per ton. In these cases the phosphoric acid and potash have not been figured in offsetting the nitrogen deficiency as the products were bought primarily as a nitrogen source and no account was made of the potash and phosphoric acid in the product in the statement of guarantee furnished by the manufacturer or shipper.

Buckeye Cotton Oil Co., No. 3 Nitrogen found 6.33%, guaranteed 6.56%. No. 30, nitrogen found 5.87, guaranteed 6.18%.

A. W. Higgins, Westfield, Mass., No. 1134. Nitrogen found 6.65%, guaranteed 7.00%.

Humphreys-Godwin Co., No. 37. Nitrogen found 6.01%, guaranteed 6.12%. No. 39, nitrogen found 5.96%, guaranteed 6.18%. No. 170, nitrogen found 7.30%, guaranteed 7.50%. No. 931, nitrogen found 7.15%, guaranteed 7.50%.

Union Seed & Fertilizer Co., No. 4. Nitrogen found 5.98%, guaranteed 6.17%. No. 19, nitrogen found 5.87%, guaranteed 6.17%. No. 1057, nitrogen found 6.01%, guaranteed 6.17%. No. 1058, nitrogen found 5.94%, guaranteed 6.17%.

In this connection it might be added that the nitrogen deficiencies here enumerated were all made good by a rebate to the farmer, many of the products being sold with the understanding that if the nitrogen was found deficient a rebate would be in order. As will be seen from the table of analyses many brands put out by these various companies showed their nitrogen guarantee to be well maintained.

Nitrate of Soda. Thirty-four samples, represented by 17 analyses, have been examined.

Two samples were found deficient in nitrogen. Nitrate of soda has cost on the average of $53.88 and the average calculated commercial valuation has been $51.08 per ton. A pound of nitrogen from this source has cost on the average 17.4 cents. The two samples of nitrate of soda showing a commercial shortage of over fifty cents a ton are the following:

Lowell Fertilizer Co., No. 239-346-372-365-1116. Nitrogen found 14.76%, guaranteed 15.00%.

Whitman & Pratt Rendering Co., No. 663. Nitrogen found 15.26%, guaranteed 15.63%.

Sulfate of Ammonia. Four samples have been analyzed and all were found well up to the guarantee. The average retail cash price has been $76.33 and the average commercial valuation $67.52 per ton. Sulfate of ammonia has tested on the average 20.46 per cent nitrogen. The average cost of a pound of nitrogen in this form has been 18.65 cents.

Calcium Cyanamid. Eight analyses were made and the nitrogen guarantee was well maintained in all cases. The average retail cash price for this product has been $61.75 and the average calculated commercial valuation $58.78 per ton. Calcium cyanamid tested on the average 15.07 per cent nitrogen, making the average cost of a pound of nitrogen from this source 20.48 cents. In valuing this product no account has been made of the 50 odd per cent of calcium oxide present which would eventually have a desirable sweetening effect on the soil.

POTASH COMPOUNDS.

High Grade Sulfate of Potash. Thirty-two samples have been inspected, represented by 14 analyses. The guarantee was well maintained in all cases. The retail cash price for this salt has been $49.53 and the average calculated commercial valuation $50.21 per ton. The average analysis for high grade sulfate of potash showed 50.21 per cent of potassium oxide. The pound of actual potash, in this form, has cost on the average 4.93 cents.

Potash-Magnesia Sulfate. Seven analyses have been made and the potash guarantee was maintained in all but three cases. The average retail cash price has been $28.50 and the average calculated commercial valuation $26.49 per ton. This salt has tested on the average 26.49 per cent actual potash. The average cost of a pound of potash from this source has been 5.37 cents. Only one of the brands had a commercial shortage of over fifty cents per ton.

American Agricultural Co., No. 420. Potash found 24.76%, guaranteed 26.00%. Two other samples of this same brand were found well up to the guarantee.

Muriate of Potash. Sixteen analyses have been made, representing 28 samples. In two cases the potash guarantee was not maintained. The average percentage of potash has been 50.74. The average retail cash price has been $41.17 and the average calculated commercial valuation $40.59 per ton. The pound of actual potash has cost on the average 4.06 cents One brand has shown a commercial shortage of over fifty cents per ton.

Lowell Fertilizer Co., No. 241-371-608-1109. Potash found 49.24%, guaranteed 50.00%.

Kainit. Seven samples have been analyzed and found as represented. The average retail cash price has been $16.50 and the calculated commercial valuation $10.85 per ton. The cost of potash per pound in this salt has been 6.08 cents. The average per cent of actual potash was 13.56.

PHOSPHORIC ACID COMPOUNDS.

Dissolved Bone Black. Three samples of dissolved bone black were examined and no deficiencies were found. The average available phosphoric acid found in this material was 16.06 per cent. The average calculated commercial valuation has been $14.46.

Acid Phosphate. Eighteen analyses of acid phosphate were made, representing thirty-three samples. In all cases but two the guarantee of available phosphoric acid has been maintained. The average retail cash price has been $13.41 and the average calculated commercial valuation has been $13.75 per ton. The average available phosphoric acid found in acid phosphate was 15.39 per cent. The pound of available phosphoric acid has cost on the average 4.36 cents. One brand showed a commercial shortage of over fifty cents per ton.

National Fertilizer Co., No. 214-1137. Available phosphoric acid found 12.06%, guaranteed 14.00%.

Basic Slag. Phosphate. Ten analyses of Thomas basic slag phosphate have been made, representing 22 samples. No cases were found where the available phosphoric acid was below the guarantee. The average retail cash price paid for basic slag was $14.89 and the average calculated commercial valuation $13.75 per ton. Slag has tested on the average 15.89 per cent available phosphoric acid. The pound of available phosphoric acid has averaged 4.69 cents.

MIXED COMPLETE FERTILIZERS.

For the sake of better comparison the mixed complete fertilizers have been divided into three grades, as in previous years. Those having a calculated commercial valuation of $24.00 or over per ton have been designated as high grade, between $18.00 and $24.00 per ton medium grade, and below $18.00 per ton low grade. The following table shows a comparison of the three grades of fertilizer in relation to retail cash price, calculated commercial value and money difference between cash price and commercial value.

	High Grade.		Medium Grade		Low Grade.	
	1913	1914	1913	1914	1913	1914
Average retail cash price per ton,	$38.50	$38.75	$33.19	$33.52	$29.85	$29.65
Average calculated commercial value per ton,	29.50	28.54	20.83	20.78	15.24	14.70
Average money difference	9.00	10.21	12.36	12.74	14.61	14.95

The above table shows:

(1). That on the average the complete mixed fertilizers have cost about 12 cents more per ton than for 1913.

(2). That the average calculated commercial value of plant food in a ton has been 52 cents less than for the previous season.

(3). That the percentage excess of the selling price over the calculated commercial value of plant food in the low grade fertilizers is almost three times more than in the high grade goods and is about double that in the medium grade fertilizers.

(4). That with a 30.7 per cent advance in price over the low grade fertilizers, the high grade furnishes about 94.1 per cent increase in commercial plant food value.

(5). The money difference between the average selling price and the average commercial valuation in the high grade fertilizers is $4.74 less than in the low grade goods.

Table showing the average chemical composition of the three grades of fertilizers.

GRADE	Number of Brands	Percent of Whole Number	Nitrogen			Phosphoric Acid				Potassium Oxide	Lbs. of Available Plant Food in 100 Lbs. of Fertilizer
			Total	Percentage Availability of Total Nitrogen	Percentage Availability of Org. Nitrogen	Soluble	Reverted	Available	Insoluble		
High	182	50.42	4.13	86.20	70.92	3.53	3.81	7.34	1.39	7.97	18.86
Medium	94	26.04	2.49	87.35	70.34	3.96	3.52	7.48	1.45	5.93	15.58
Low	85	23.55	1.74	77.58	60.61	4.08	2.33	6.41	1.13	2.97	10.74

The above table shows:

(1). That a ton of the average high grade fertilizer furnishes

47.8 pounds more nitrogen and 100 pounds more actual potash than does a ton of the low grade goods.

(2). That a ton of the average high grade fertilizer furnishes 32.8 pounds more nitrogen and 40.8 pounds more potash than does a ton of the medium grade goods.

(3). That with a 30.7 per cent advance in price over the low grade fertilizer, the high grade furnishes about 76 per cent increase in available plant food.

(4). The average high grade fertilizer, with about 15.6 per cent advance in price over the medium grade goods, furnishes over 21.7 per cent more plant food and 37.3 per cent increase in commercial value.

(5). The percentage activity of total nitrogen was found to be 8.62, and the percentage activity of the organic nitrogen was 10.31 per cent more in the high grade fertilizer than in the low grade brands.

(6). When compared with the previous year it is found that the percentage activity of the organic nitrogen in the high grade brands shows an improvement. In case of the medium and low grade goods it is not quite up to the average of the preceding year.

Table showing the comparative cost per pound of nitrogen, potash and phosphoric acid in its various forms in the three grades of fertilizers.

FORMS OF ELEMENT	Low Grade Fertilizer	Medium Grade Fertilizer	High Grade Fertilizer
Nitrogen (as nitrates and ammoniates)	33.3 cts.	26.6 cts.	22.4 cts.
Nitrogen (organic)...................	39.3 "	31.5 "	26.5 "
Potash (as muriate)...................	8.1 "	6.5 "	5.4 "
Soluble phosphoric acid..............	9.1 "	7.2 "	6.1 "
Reverted phosphoric acid............	8.1 "	6.5 "	5.4 "
Insoluble phosphoric acid............	4.0 "	3.2 "	2.7 "

This summary shows:

(1). The most economical fertilizer to buy is the "high grade" or the one valuing commercially $24.00 or over per ton.

(2). The purchaser of high grade fertilizers in place of low grade would save 11.9 cents on every pound of nitrogen and nearly 3 cents on every pound of potash and phosphoric acid.

(3). Nitrogen in medium grade fertilizers has cost 4.6 cents and potash and phosphoric acid 1 cent per pound more than in high grade goods.

(4). About 49.5 per cent of the brands of fertilizers sold in the state during the year may be classed as low and medium grades.

Summary of results of analyses of complete fertilizers as compared with guarantee:

MANUFACTURER.	No. of Brands Analyzed	No. with all three elements equal to guarantee	No. equal to guarantee in commercial value	No. with one element below guarantee	No. with two elements below guarantee	No. with three elements below guarantee.
W. H. Abbott	3	3	3	—	—	—
Alphano Humus Co.	2	2	2	—	—	—
American Agric. Chemical Co.	74	34	65	34	6	—
Armour Fertilizer Works	13	3	10	7	3	—
Baugh & Sons Co.	3	3	3	—	—	—
Beach Soap Co.	6	3	6	3	—	—
Berkshire Fertilizer Co.	9	6	9	3	—	—
C. M. Bolles	1	1	1	—	—	—
Boston Fertilizer Co.	2	1	1	1	—	—
Bowker Fertilizer Co.	26	12	21	12	2	—
Joseph Breck & Sons, Corp.	3	1	3	2	—	—
Carter's Tested Seeds, Inc.	4	3	4	1	—	—
The E. D. Chittenden Co.	8	5	8	3	—	—
Clark Refining Co.	1	1	1	—	—	—
Clay & Sons	1	1	1	—	—	—
The Coe-Mortimer Co.	18	7	14	6	5	—
Consumers' Fertilizer Co.	1	1	1	—	—	—
Eastern Chemical Co.	1	—	1	1	—	—
Essex Fertilizer Co.	9	6	8	3	—	—
R. & J. Farquhar Co.	1	1	1	—	—	—
John Glennie	1	1	1	—	—	—
C. W. Hastings	1	—	—	—	1	—
Thomas Hersom & Co.	1	1	1	—	—	—
International Agricultural Corp.	8	5	8	3	—	—
Johnson Seed Potato Co.	2	—	—	—	2	—
Lister's Agric. Chemical Works	10	5	9	3	2	—
Lowell Fertilizer Co.	15	11	14	4	—	—
James E. McGovern	1	1	1	—	—	—
Mapes' Formula & Peru. Guano Co.	17	15	16	1	1	—
The Mitchell Fertilizer Co.	1	1	1	—	—	—
National Fertilizer Co.	15	11	12	2	2	—
Natural Guano Co.	1	1	1	—	—	—
New England Fertilizer Co.	11	4	8	6	1	—
Olds & Whipple	6	5	6	1	—	—
Parmenter & Polsey Fertilizer Co.	8	3	6	4	1	—
R. T. Prentiss	2	1	1	1	—	—
Pulverized Manure Co.	2	2	2	—	—	—
The Rogers Manufacturing Co.	10	7	10	3	—	—
The Rogers & Hubbard Co.	10	8	10	2	—	—
Ross Bros. Co.	5	1	2	2	2	—
F. S. Royster Guano Co.	8	4	6	3	1	—
J. W. Sanborn	3	2	3	1	—	—
Sanderson Fert. & Chem. Co.	8	3	8	5	—	—
M. L. Shoemaker & Co.	1	1	1	—	—	—
A. M. Smith & Co.	1	1	1	—	—	—
Springfield Rendering Co.	2	—	2	2	—	—
Wm. Thompson & Sons	2	2	2	—	—	—
20th Century Specialty Co.	1	1	1	—	—	—
Virginia-Carolina Chemical Co.	5	4	5	1	—	—
Whitman & Pratt Rendering Co.	6	2	6	4	—	—
Wilcox Fertilizer Co.	9	9	9	—	—	—
A. H. Wood & Co.	3	1	2	2	—	—
Worcester Rendering Co.	2	1	2	1	—	—

The table on the opposite page shows:

(1). That out of a total of 364 brands of complete fertilizers analyzed, 156 (43 per cent of the total number) fell below the minimum guarantee in one or more elements; these deficiencies may be expressed as follows:

127 brands deficient in one element.
29 brands deficient in two elements.

(2). That 45 brands (about 13 per cent of the whole number) showed a commercial shortage; that is, when overruns were used to offset shortages, the value of the plant food found did not equal the value guaranteed. The following deficiencies were found:

82 brands were deficient in nitrogen.
61 brands were deficient in available phosphoric acid.
42 brands were deficient in potash.

(3). More nitrogen and available phosphoric acid deficiencies were recorded than for the previous season. There were 12 more potash shortages and the commercial shortages were 16 more than for 1913.

Table showing commercial shortages (25 cents and over per ton) in mixed commercial fertilizers for 1913 and 1914.

Commercial Shortages	Number of Brands.	
	1913.	1914.
More than $2.00 per ton	2	3
Between $1.00 and $2.00 per ton	9	6
Under $1.00 not less than 25 cts. per ton	7	25

The following brands have shown a commercial shortage of 50 cents or over per ton, value of overruns being used in all cases to reduce shortages.

American Agricultural Chemical Co., Grass and Lawn Top Dressing Nos. 774-836-874-990. Nitrogen found 3.56%, guaranteed 3.91%; available phosphoric acid found 5.36%, guaranteed 5.00%; potash found 2.23%, guaranteed 2.00%.

Special Grass and Garden Mixture No. 331. Nitrogen found 7.76%, guaranteed 8.23%; available phosphoric acid found 6.79%, guaranteed 7.00%; potash found 7.23%, guaranteed 8.00%. Three other samples of this same brand were collected and analyzed, and all showed serious commercial shortages ranging from $1.36 up to $4.40 per ton.

Darling's Blood, Bone and Potash Nos. 984-1088. Nitrogen found 3.63%, guaranteed 4.11%; available phosphoric acid found 6.97%, guaranteed 7.00%; potash found 7.54%, guaranteed 7.00%.

Read's Practical Potato Special No. 557. Nitrogen found .84%, guaranteed .82%; available phosphoric acid found 6.63%, guaranteed 4.00%; potash found 4.03%, guaranteed 8.00%.

Armour Fertilizer Works, Special Value Fertilizer No. 1005. Nitrogen found 2.56%, guaranteed 2.88%; available phosphoric acid found 8.39%, guaranteed 8.00%; potash found 5.62%, guaranteed 6.00%.

Boston Fertilizer Co., Boston Humus No. 870. Nitrogen found .95%, guaranteed 1.40%; total phosphoric acid found .12%; potash found .17%.

Bowker Fertilizer Co., Blood, Bone and Potash No. 1214. Nitrogen found 3.73%, guaranteed 4.11%; available phosphoric acid found 7.27%, guaranteed 7.00%; potash found 7.73%, guaranteed 7.00%.

Bowker's Highly Nitrogenized Mixture No. 1205. Nitrogen found 7.76%, guaranteed 8.23%; available phosphoric acid found 7.01%, guaranteed 7.00%; potash found 8.39%, guaranteed 8.00%.

Bowker's Lawn and Garden Dressing No. 533. Nitrogen found 2.86%, guaranteed 3.29%; available phosphoric acid found 4.44%, guaranteed 4.00%; potash found 5.06%, guaranteed 5.00%.

Stockbridge's Special Complete Manure for Potatoes and Vegetables Nos. 277-369-411-664-828-853-940-1094. Nitrogen found 3.14%, guaranteed 3.29%; available phosphoric acid found 6.15%, guaranteed 6.00%; potash found 9.52%, guaranteed 10.00%.

Stockbridge's Special Complete Manure for Tobacco No. 1013. Nitrogen found 3.99%, guaranteed 5.76%; available phosphoric acid found 6.33%, guaranteed 4.00%; potash found 10.76%, guaranteed 10.00%.

The Coe-Mortimer Co., E. Frank Coe's Double Strength Top Dressing No. 988. Nitrogen found 6.72%, guaranteed 8.23%; available phosphoric acid found 7.75%, guaranteed 7.00%; potash found 8.00%, guaranteed 8.00%. Another sample of this same brand, No. 1251, collected at the request of the company showed but little improvement over the first analysis.

E. Frank Coe's Extra Special Potato Fertilizer and Fruit Grower No. 1185. Nitrogen found 1.48%, guaranteed 1.65%; available phosphoric acid found 8.44%, guaranteed 8.00%; potash found 9.29% guaranteed 10.00%.

Johnson Seed Potato Co., Ideal Potato Manure, Hoeing Brand, No. 924. Nitrogen found 2.94%, guaranteed 3.28%; available phosphoric acid found 8.01, guaranteed 8.00%; potash found 9.30%, guaranteed 10.00%.

Mapes Formula & Peruvian Guano Co., Mapes' Top Dresser Improved Half Strength No. 1241. Nitrogen found 4.11%, guaranteed 4.94%; available phosphoric acid found 2.75%, total phosphoric acid found 4.03%, guaranteed 4.00%; potash found 1.57%, guaranteed 2.00%.

National Fertilizer Co., Chittenden's High Grade Top Dressing No. 1108. Nitrogen found 7.96%, guaranteed 8.23%; available phosphoric acid found 7.50%, guaranteed 7.00%; potash found 8.24%, guaranteed 8.00%.

New England Fertilizer Co., New England Market Garden Manure No. 510. Nitrogen found 3.93%, guaranteed 4.10%; available phosphoric acid found 6.81%, guaranteed 7.00%; potash found 7.29%, guaranteed 7.00%.

Ross Bros. Co., Worcester Special Lawn Dressing Fertilizer No. 902. Nitrogen found 2.57%, guaranteed 2.88%; available phosphoric acid found 8.21%, guaranteed 8.00%; potash found 3.82%, guaranteed 4.00%.

A. H. Wood & *Co.*, Wood's 777 Fertilizer No. 981. Nitrogen found 7.00%, guaranteed 7.00%; available phosphoric acid found 7.73%, guaranteed 7.00%; potash found 4.79%, guaranteed 7.00%.

QUALITY OF PLANT FOOD.

Character of Nitrogen.

In the medium and high grade complete fertilizers 52.6 per cent, and in the low grade goods 43.1 per cent of the total nitrogen was from mineral sources. This is a somewhat larger proportion of mineral nitrogen than can be safely used on some hoed crops, for if a ton or more should be applied to the acre the crop might receive too much soluble nitrogen in the early stages of growth, and on light soils, in case of a wet season,one could expect more or less loss through leaching. The increased use of the mineral forms of nitrogen in mixed goods is no doubt due to its lower cost, a condition which will not be likely to change much from year to year. The increased tonnage of the mixed commercial fertilizers each successive year means a greater demand for the organic ammoniates, and the failure of the supply in meeting this increased demand can only result in the higher cost of the organic forms of nitrogen.

The following deductions are made regarding the quality of the organic nitrogen in the various grades of mixed fertilizer:

The high and medium grade fertilizers carried 47.4 per cent and the low grade fertilizers 56.8 per cent of the total nitrogen in organic form. Thirty cases were noted where organic ammoniates of low grade were used at least as a part source of the organic nitrogen. Some cases among this number may have resulted from the use of the organic ammoniates as a conditioner to improve the physical character of the goods. If such cases did occur our inspectors failed to note any mention of the use of such low grade materials either on the stencil or tag. These questionable nitrogen sources were distributed as follows: 13 from low grade, 4 from medium and 13 from high grade goods. This is about the same condition as was noted during the season of 1913.

In the present bulletin the organic nitrogen has been reported as in previous years: — (a) *Water soluble organic nitrogen*, (b) *active water insoluble organic nitrogen*, (c) *inactive water insoluble organic nitrogen*. From information furnished by the tables of analyses it is believed that anyone will be able to readily detect cases where inferior forms of organic nitrogen have been used. It might be added that cases should be viewed with suspicion which show collectively the following characteristics:

(a) *The inactive water insoluble organic nitrogen equal or exceeding the active water insoluble organic nitrogen, except in cases of high grade tobacco fertilizers having most of their organic nitrogen derived from cottonseed meal or castor pomace.*

(b) *The total nitrogen found but little in excess of the minimum guarantee.*

(c) *The presence of only small amounts of water soluble organic nitrogen.*

The following summary table shows the average amount found and the *quality* of nitrogen used by each manufacturer in the brands sold during 1914:

MANUFACTURER.	Number of Brands	Total Nitrogen	Percentage Activity of Total Nitrogen	Nitrates and Ammoniates	Total Organic Nitrogen	Percentage Activity of Total Organic Nitrogen	Percentage Activity of the Water Insoluble Organic Nitrogen
W. H. Abbott	3	3.79	78.36	1.17	2.62	68.71	58.16
Alphano Humus Co.	2	2.44	56.96	.52	1.92	45.31	37.87
American Agric. Chem. Co.	74	2.82	87.60	1.67	1.15	69.57	62.76
Armour Fertilizer Works	13	2.73	79.85	.98	1.75	68.57	57.70
Baugh & Sons Co.	3	2.60	87.70	1.63	.97	67.02	53.63
Beach Soap Co.	6	3.84	86.98	1.81	2.03	75.37	53.70
Berkshire Fertilizer Co.	6	3.73	82.84	1.64	2.09	69.38	63.00
C. M. Bolles	1	4.41	92.74	3.14	1.27	74.80	63.22
Boston Fertilizer Co.	2	1.35	42.96	.13	1.22	37.89	34.75
Bowker Fertilizer Co.	26	2.91	86.95	1.58	1.38	72.46	63.81
Joseph Breck & Sons Corp.	3	2.82	72.35	1.15	1.67	53.30	42.65
Carter's Tested Seeds Inc.	4	4.62	90.92	3.48	1.14	63.16	53.84
The E. D. Chittenden Co.	8	3.62	84.53	2.09	1.53	63.40	50.44
Clay & Sons	1	4.35	81.15	2.30	2.05	60.00	57.95
The Coe-Mortimer Co.	18	3.32	87.95	1.79	1.53	73.86	64.92
Consumers' Fertilizer Co.	1	2.65	99.25	2.56	.09	77.78	60.00
Essex Fertilizer Co.	9	2.82	88.30	1.17	1.65	80.00	62.07
R. & J. Farquhar Co.	1	1.28	56.25	.14	1.14	36.85	27.27
John Glennie	1	3.52	83.52	.31	3.21	81.94	61.34
Thomas Hersom & Co.	1	4.27	85.25	2.20	2.07	69.56	65.76
International Agricultural Corp.	8	3.15	88.56	1.75	1.40	74.29	56.10
Johnson Seed Potato Co.	2	3.08	83.12	1.99	1.09	52.29	40.23
Listers Agricultural Chem. Works	10	2.58	83.72	1.19	1.39	69.79	54.82
Lowell Fertilizer Co.	15	2.72	87.50	1.37	1.35	74.82	55.84
J. E. McGovern	1	3.73	71.58	.33	3.40	31.18	55.08
Mapes Formula & Peru. Guano	17	3.93	91.10	2.83	1.10	68.19	55.13
The Mitchell Fertilizer Co.	1	3.38	89.05	1.92	1.46	72.60	66.96
National Fertilizer Co.	15	3.98	81.91	1.69	2.29	68.56	61.29
Natural Guano Co.	1	2.31	45.89	.31	2.00	37.50	28.98
New England Fertilizer Co.	11	2.78	88.14	1.42	1.36	75.74	58.23
Olds & Whipple	6	3.86	74.35	1.24	2.62	62.22	48.71
Parmenter & Polsey Fertilizer Co	8	2.78	89.58	1.51	1.27	77.17	62.32
R. T. Prentiss	2	4.45	92.14	3.49	.96	63.54	53.34
Pulverized Manure Co.	2	2.17	44.24	.28	1.89	35.98	29.65
The Rogers Manufacturing Co.	10	4.21	77.44	1.33	2.88	67.02	62.45
The Rogers & Hubbard Co.	10	3.69	86.18	1.90	1.79	71.51	62.50
Ross Bros. Co.	5	3.06	86.60	1.66	1.40	70.72	59.00
F. S. Royster Guano Co.	8	2.61	79.70	1.31	1.30	59.23	55.09
J. W. Sanborn	3	3.45	89.86	2.37	1.08	67.60	65.00
Sanderson Fert. & Chem. Co.	8	2.93	79.18	.81	2.12	71.23	57.94
M. L. Shoemaker & Co.	1	2.89	85.82	.81	2.08	80.29	63.72
A. M. Smith & Co.	1	7.33	68.49	.87	6.46	79.72	58.53
Springfield Rendering Co.	2	2.57	85.60	1.03	1.54	75.98	54.88
Wm. Thomson & Sons	2	4.82	88.80	2.35	2.47	78.14	68.97
20th Century Specialty Co.	1	2.96	98.98	2.90	.06	50.00	50.00
Virginia-Carolina Chemical Co.	5	3.15	82.22	1.88	1.27	55.90	45.63
Whitman & Pratt Rendering Co.	6	3.51	88.60	2.18	1.33	69.93	57.00
Wilcox Fertilizer Co.	9	2.91	84.88	1.75	1.16	62.07	53.68
A. H. Wood & Co.	3	4.46	87.44	2.76	1.70	67.06	63.40
Worcester Rendering Co.	2	2.86	84.97	.73	2.13	79.82	53.26

Vegetation Experiment to Determine the Nitrogen Activity of Several Fertilizers Found in 1913 Inspection, and a Comparison with the Laboratory (Alkaline Permanganate) Method.

A few fertilizer manufacturers have expressed the belief that the alkaline permanganate method was not a reliable one in detecting the presence of low grade organic ammoniates. Although the method has been successfully checked several times with vegetation experiments conducted in other experiment stations, it was thought best to conduct a very careful vegetation test in our own greenhouses during the winter of 1913 in order to throw more light upon this important matter.

The nitrogen sources used were in a large measure derived from the water insoluble portion of the nitrogen content in several of the mixed commercial fertilizers taken from the 1913 fertilizer inspection, and included not only some of the brands noted as suspicious, but also other brands the quality of whose nitrogen was not in any way questioned.

The following brief data may be noted regarding the outline of the experiment:

Soil: The soil for the experiment was selected on account of its nitrogen deficiency and was taken from the Station south soil test plot No. 11. It was found to contain by actual analysis .125 per cent total nitrogen. The pots held about 43 pounds of soil and were filled with a mixture composed of one part of soil and two parts of sifted sand which carried .0039 total nitrogen.

Organic Matter: The organic matter necessary to produce normal conditions was furnished by an application of 100 grams of decomposed straw; (this would be equivalent to about 4 cords per acre).

Lime: Each pot received 27.52 grams of marl (equivalent to 2 tons per acre).

Fertilizer: The fertilizer and lime were mixed thoroughly with the soil in each pot. The source of each fertilizing ingredient was as follows:

Potash: Each pot received 10 grams of high grade sulfate of potash testing 49.92 per cent $K2O$; (this would be equivalent to 1320 pounds per acre).

Phosphoric Acid: Each pot received 18 grams of acid phosphate testing 14.57 per cent available phosphoric acid and 18 grams of basic slag phosphate testing 14.80 per cent phosphoric acid, (equivalent to 2800 pounds of acid phosphate and 2800 pounds of basic slag phosphate per acre).

Nitrogen: A good grade of dried red blood was selected as a standard, one series received an application of .42 grams nitrogen per pot, (59.5 pounds of nitrogen or 562 pounds of blood per acre). Another series received .85 grams of nitrogen per pot, (127 pounds of nitrogen or 1200 pounds of blood per acre). A third series received 1.12 grams of nitrogen per pot,(172 pounds of nitrogen or 1,625 pounds of blood per acre). The two increased amounts of nitrogen were used as checks to indicate whether the full action of the nitrogen was obtained where the minimum quantity was used.

(The fact that they gave larger yields proved that general conditions were such that the smaller amount could exercise the full effect of which it was capable.)

A series of pots was used which contained 50 per cent more potash and phosphoric acid, in order to show that the nitrogen was the only limiting factor. (The yields were not increased by this additional application.)

Other Sources of Nitrogen: In case of the commercial fertilizers each one was washed out with distilled water so as to remove all soluble nitrogen. The residue, dried at a low temperature, was tested for its nitrogen and a calculation made to determine how much of each fertilizer residue was to be used to furnish .42 and .85 grams of nitrogen. Each fertilizer residue was again tested by the alkaline permanganate method for its nitrogen activity so as to be able to compare the laboratory method with the vegetation experiment by using material produced under the same conditions. There was another laboratory check secured when the fertilizers were analyzed in our inspection work.

Crop: Oats were selected as the crop to be grown and were thinned to ten plants per pot. The crop was harvested when in milk by cutting even with the ground. Dry matter determinations were made on the air-dried products. The crop throughout the growing season was in charge of Mr. R. L. Coffin, who has had much experience in caring for vegetation experiments of this nature. Extreme care was used in furnishing suitable temperatures and the supplying of necessary water conditions was regulated by weighing each pot, water being applied both to the surface and through sub-irrigation.

NATURE OF MATERIAL	Nitrogen Activity by Alkaline Permanganate Method	Nitrogen Activity by Duplicate Vegetation Tests (Oats) .42 gr. N.
Dried blood (unwashed))	—	80
Sheep manure.	29	toxic
Ground tobacco stems	18	toxic
Dried blood (water insoluble nitrogen)	76	75
Castor pomace	53	70
Complete fertilizer No. 1	36	19*
" " " 2	46	18
" " " 3	48	24
" " " 4	53	39
" " " 5	41	31
" " " 6	51	32
" " " 7	58	70
" " " 8	49	46
" " " 9	37	37
" " " 10	54	49
" " " 11	57	68
" " " 12	46	40
" " " 13	45	15
" " " 14	48	18
" " " 15	48	33
" " " 16	46	25
" " " 17	60	63
" " " 18	47	48
" " " 19	75	70
" " " 20	49	40

*Certain observed facts indicate that this figure is perhaps too low.

In interpreting the results given in the above table it must be remembered that the activity of the nitrogen in the various materials as determined by the alkaline permanganate method is based upon the actual amount of ammonia liberated by the various reagents and heat, and anything testing around 50 or lower is regarded with suspicion.

In case of the vegetation tests the increase in yield of dry matter over the no nitrogen pots obtained with *unwashed* dried blood is placed at 80 and the increases in yield of dry matter due to the other nitrogen sources (derived from the water insoluble portion of the various fertilizers) are compared with it.

A study of the table suggests the following conclusions:

1. In case of the sheep manure and ground tobacco stems, the large amount of organic matter necessary to furnish the correct amount of water insoluble organic nitrogen seemed to have some injurious effect. A much less yield of dry matter, accompanied by a much reduced root growth, was obtained than on the no nitrogen pots.

2. All of the brands of complete fertilizer showing a questionable nitrogen activity by the alkaline permanganate method gave a rela-

tively low nitrogen activity by the vegetation experiment, the average of sixteen such cases being 46.5 by the alkaline permanganate method and 32 by the vegetation experiment. It should be noted in this connection that the laboratory method *favors* the fertilizer in almost every instance.

3. Sample No. 11 was the only complete fertilizer tested which shows the water insoluble organic nitrogen to be of good quality when measured by the vegetation experiment and of suspicious quality by the laboratory method. A large proportion of the organic nitrogen in this brand was derived from cottonseed meal and castor pomace. The results obtained with castor pomace also show that the laboratory method is likely to give somewhat too low results on this class of organic ammoniates. This bears out the observations of Jones of Vermont and Hartwell of Rhode Island, and suggests that on such brands, in the future, some other method should be used such as the acid pepsin digestion method.

It must be remembered that the above data are the result of only one year's experiment. They indicate, however, in most cases that the alkaline permanganate method is of distinct value in separating the good from the inferior forms of organic nitrogen. The ease and rapidity with which the method can be executed warrants a continuance of its use in our inspection work.

It may be of interest to note that at a recent meeting of the Association of Official Agricultural Chemists both the alkaline permanganate method and the neutral permanganate method were made official.

Character of Phosphoric Acid.

Eighty-four per cent of the total phosphoric acid found in all the complete fertilizers analyzed was present in available form and 55 per cent of the available phosphoric acid was present in water soluble form. This shows a greater solubility than occured during the previous year. In case of the superphosphates or acid phosphate 95 per cent of the average total phosphoric acid found was classed as available and 74 per cent of the available phosphoric acid was in water soluble form. This shows the use of materials other than superphosphates or acidulated goods in the make-up of the complete fertilizers. Of course this is a legitimate practice as the use of different grades of tankage necessitates the presence of more or less phosphoric acid in the tricalcic form.

Character of Potash.

In the tables of analyses wherever the potash is present in form of sulfate or carbonate an asterisk (*) or dagger (†) has been used in the "found" potash column. These characters refer to foot notes giving the proportion of each form of potash. The absence of these characters indicates that all the potash present is as chloride.

As a general thing it might be said that the form of potash was found present as claimed. The presence of small amounts of chlorides in tobacco formulas and other special crop formulas where sulfate and carbonate are guaranteed is probably unavoidable. Nitrate of soda may carry traces of chlorides as may also the different grades of sulfate of potash. Some kinds of bone and tankage may also carry traces of soluble chlorides. In the carbonated goods the presence of considerable chlorine may indicate that the source of potash was from the beet sugar industry, as the carbonate of potash from this source carries from 8 to 12 per cent muriate of potash in connection with carbonate of potash. A study of the tables shows that 39 brands of tobacco fertilizer were analyzed. The total water soluble potash present was 7.30 per cent of which 6.19 per cent was from sulfate and 1.13 from muriate. Five brands of tobacco fertilizer were analyzed having their potash guaranteed as carbonate. In these brands, out of a total of 7.63 per cent water soluble potash, 5.34 per cent was as claimed, .83 per cent was present as muriate and 1.46 per cent as sulfate. In case of the tobacco brands a total potash test has been made. This includes not only that portion of the potash soluble in water but any that may be present in organic form, such as from cottonseed meal, castor pomace, etc. These percentages are expressed in form of foot notes. Wherever no total potash is given it may be inferred that the total potash test did not exceed the water soluble test.

LIME COMPOUNDS.

The tables of analyses of the lime compounds show that the various brands of agricultural lime analyzed have been grouped under five heads and are as follows:

Hydrated or slaked lime,	18	analyses,representing	15	brands.
Ground limestones,	11	" "	7	"
Marl,	4	" "	2	"
Lime ashes,	5	" "	4	"
Gypsum or land plaster,	5	" "	5	"

The meaning of the names of these various groups of lime compounds are probably well understood by the average reader. To those who are not familiar with the various terms reference is made to bulletin 147 published in December, 1913.* The analyses have been published in the same form as in previous years. On the left hand page will be found the actual analyses of the different lime compounds. Reading across on the opposite page will be found the probable combinations of the ingredients as calculated from the analytical data and which will probably nearly correspond with the actual composition of the lime products in question. Wherever possible we have figured the actual cost of 100 pounds of calcium and magnesium oxides in the various lime sources. Foot notes refer to the conditions of sales, whether in bulk, in paper bags or cloth sacks. Most of the different brands may be purchased in bulk which, of course, means a more favorable quotation although it is needless to say that the handling of the product is much more disagreeable under these conditions. It is believed that ordinarily the farmer will be much better pleased to purchase lime either in paper sacks or in cloth bags. Particularly is this true of the more active forms such as the granulated caustic lime and hydrated or slaked lime. The different materials vary widely as to actual cost. The following table has been compiled which shows the highest, the lowest and the average cost of 100 pounds of calcium oxide from the various grades of lime.

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* No longer available for distribution.

SOURCES	Cost of 100 Pounds of Calcium and Magnesium Oxides		
	Highest	Lowest	Average
Hydrated or slaked lime	62 cts.	29 cts.	46 cts.
Ground limestone	79 "	39 "	51 "
Marl	70 "	53 "	59 "
Lime ashes	89 "	59 "	70 "

From the data furnished in this table it will be seen that it is well worth anyone's time to thoroughly investigate the condition of the lime trade before making a purchase. It is a good plan to write for quotations to the various lime manufacturers and to purchase the lime product which will give the greatest amount of calcium and magnesium oxides for the least money. It may be added that in making a selection of a lime product in general the milder forms of lime, such as air-slaked lime, marl and ground limestone, will do best on the open, porous, sandy soils. The more active forms of lime, such as slaked lime, will give best results on the heavier clayey soils. Gypsum or land plaster should not be bought for the purpose of sweetening sour soils. This product has its lime all present in form of sulfate and would not neutralize acid conditions.

FIELD EXPERIMENTS WITH NEW MINERAL FERTILIZER AND STONEMEAL.

The field experiment begun in 1913 to establish the actual worth of New Mineral Fertilizer and Stonemeal as fertilizers, was, as planned, continued during the summer of 1914. It was thought best to rotate the crops and to note the effect of a lime application to the Stonemeal and New Mineral Fertilizer plats. The crops employed were corn, following potatoes, potatoes following oats and oats following corn. The field was ploughed during the fall of 1913. The field work connected with the experiment was in charge of Mr. E. F. Gaskill, assistant agriculturist of the experiment station. The details of the experiment were as follows:

Corn Experiment (following potatoes).

Seven one-fortieth acre plats were devoted to this crop and received fertilizer at the following rates per acre:

		Fertilizer Schedule.	
		1913	1914
Plat 8	No fertilizer	—	—
" 1	No fertilizer	—	—
	Lime	—	1 ton
" 2	Stonemeal	1 ton	1 "
" 7	Stonemeal	1 "	1 "
	Lime	—	1 "
" 6	Lime	—	1 "
	Manure	4 cords	4 cords
	Nitrate of soda	100 lbs.	100 lbs.
	Tankage	400 "	150 "
	Basic slag phosphate	—	500 "
	H. G. sulfate of potash	220 "	150 "
	Acid phosphate	400 "	—
" 4	New Mineral Fertilizer	1 ton	1 ton
" 5	New Mineral Fertilizer	1 "	1 "
	Lime	—	1 "

On May 18th the manure was spread and disk-harrowed. On May 19th the lime and fertilizers were applied as per schedule and thoroughly worked in with an Acme harrow. On May 21st, Davis yellow flint corn was planted. There were four rows to each plat, the rows being 3 1-2 feet apart. During the summer the crop was cultivated five times and hoed four, each plat receiving the same treatment. The corn reached its maximum growth and began to glaze September 19th. The crop was cut and stooked September 28th, husked and weighed October 23rd and 24th, samples of sound and unsound corn, as well as stover, being sent to the laboratory for dry matter determinations. The following table gives the yields of dry matter, the yields in bushels of shelled corn per acre, the proportion of sound corn in total yield and the increase in total dry matter due to the several fertilizers, the no fertilizer plat being placed at 100.

Summary of Yield of Corn and Stover.

Plat	Fertilizer	Weight of Dry Matter Corn & Cob (Pounds per Acre).	Weight of Dry Matter Stover (Pounds per Acre.)	Yield in Bushels of Shelled Corn per Acre, (Basis, 12% Moisture.)	Proportion of Sound Corn in Total Yield (Percent)	Relative Yield in Dry Mattel due to the Several Fertilizers.(Basis, No Fert Plats at 100)
8	No fertilizer following no fertilizer	1900	1717	29	57	100
1	No fertilizer and lime following no fertilizer	2163	1692	35	73	107
2	Stonemeal following Stonemeal	2578	2044	40	80	128
7	Stonemeal and lime following Stonemeal	1866	1634	30	66	97
6	Lime, manure and complete fertilizer following manure and complete fertilizer	4713	3613	80	95	230
4	New Mineral Fertilizer following New Mineral Fertilizer	2085	1567	30	68	101
5	New Mineral Fertilizer and lime following New Mineral Fertilizer	1947	1743	30	78	102

Potato Experiment (following oats).

Seven one-fortieth acre plats were devoted to potatoes and received fertilizer at the following rates per acre:

			Fertilizer Schedule	
			1913	1914
Plats	1 and 8	No fertilizer or lime	—	—
"	2 " 7	Stonemeal	1 ton	1 ton
"	4	Lime	1 "	—
		Manure	4 cords	4 cords
		Nitrate of soda	150 lbs.	100 lbs.
		Tankage	200 "	400 "
		H. G. sulfate of potash	200 "	220 "
		Acid phosphate	400 "	400 "
Plats	3 and 5	New Mineral Fertilizer	1 ton	1 ton

The manure was spread and disk-harrowed May 18th. The fertilizers were applied, the land fitted with an Acme harrow, and the crop planted May 19th. The tubers which had previously been treated for scab were dropped 18 inches apart in the row, care being taken to get the same number of pieces in each row. Each plat contained four rows 3 1-2 feet apart. A good stand of crop was obtained on all of the plats, it not being necessary to replant a single hill. During the season some of the Stonemeal was applied to the tops as a dust to prevent damage by bugs; the treatment was not effective. The crop was sprayed eight times with Bordeaux and on two occasions arsenate of lead was added to the mixture. Four cultivations and two hoeings were given the crop during the summer. The plants did not make a satisfactory growth on any of the plats except plat 4, which was fertilized with complete fertilizer and manure. On September 10th the vines were dead on all of the plats except plat 4. The crop was harvested September 21st. The potatoes were found free from scab, smooth, clean, and of average size. A few large tubers were noted on Plat 4. Dry matter determinations were made at the time weights were recorded. The following table gives a summary of yields in bushels per acre, dry matter per acre, proportion of merchantable potatoes in total yield, and the yield in dry matter due to the several fertilizers on the basis of the no fertilizer plat at 100.

Summary of Yield of Potatoes.

Plats	Fertilizer	Yield in Bushels of Potatoes per Acre	Proportion of Merchantable Potatoes in Total Yield	Weights of Dry Matter (Pounds per Acre)	Relative Yield in Dry Matter due to the Several Fertilizers. (Basis, No. Fert. Plats at 100)
1 and 8	No fertilizer	105	81	1350	100
2 and 7	Stonemeal following Stonemeal	104	83	1335	99
4	Manure and complete fertilizer following lime, manure, and complete fert.	341	94	4248	315
3 and 5	New Mineral Fert. following New Mineral Fertilizer	102	81	1352	100

Oat Experiment (following corn).

Seven one-fortieth acre plats were devoted to this crop and received fertilizer at the following rates per acre:

		Fertilizer Schedule. 1913	1914
Plat 2	New Mineral Fertilizer	1 ton	1 ton
	Lime	—	1 ton
" 3	No fertilizer or lime	—	—
" 4	New Mineral Fertilizer	1 ton	1 ton
" 5	Stonemeal	1 ton	1 ton
" 6	Lime	1 ton	—
	Manure	4 cords	4 cords
	Nitrate of soda	100 lbs.	150 lbs.
	Tankage	150 "	200 "
	H. G. Sulfate of potash	150 "	200 "
	Basic slag phosphate	500 "	—
	Acid phosphate	—	400 "
" 7	Stonemeal	1 ton	1 ton
	Lime	—	1 ton
" 8	No fertilizer	—	—
	Lime	—	1 ton

On May 18th the manure was applied and disk-harrowed. The land was fitted and the lime and fertilizers were applied May 19th. The oats were sown and covered with an Acme harrow and the ground rolled May 20th. A very even stand of oats was obtained on all of the plats. The crop did not suffer particularly from rust. On August 3rd the crop was fairly well headed out. The oats were cut August 4th to be hayed. Weights were taken August 10th at which time dry matter determinations were also made. The following table gives a summary of the yields of dry matter on an acre basis, also the yield in dry matter due to the several fertilizers, the yield on the no fertilizer plat placed at 100.

Summary of Yield of Oats.

Plats	Fertilizer	Weight of Dry Matter (Pounds per Acre).	Relative Yield in Dry Matter due to the Several Fertilizers. (Basis, No Fert. Plats at 100).
3	No fertilizer following no fertilizer	2459	100
8	No fertilizer and lime following no fertilizer	2360	96
5	Stonemeal following Stonemeal	2604	106
7	Stonemeal and lime following Stonemeal	2558	104
6	Manure and complete fertilizer following lime, manure and complete fertilizer	5609	228
4	New Mineral Fert. following New Mineral Fertilizer	2981	121
2	New Mineral Fert. and lime following New Mineral Fert.	2845	116

General Conclusions.

New Mineral Fertilizer.—The results obtained in this year's test were quite satisfactory, the season being more normal than during the previous year. They also furnish data regarding the residual effect of the material which was one of the valuable advantages claimed for the product.

The results show that in case of corn and potatoes this fertilizer, when used both with and without lime and in accordance with directions furnished by the company, gave but little or no increase over the no fertilizer plats. In case of oats a small increase is noticed but the amount is in no way comparable with the increase due to the complete fertilizer and manure. The results therefore do not in any way bear out the extravagant claims of the company as to yields or quality of crop. The material seems to have had no important *residual effect* as the yield on plats which received one ton per acre for two years in succession showed but little increase in yield over the no fertilizer plats.

In general, it may be said that results in the field lead to the same final conclusion as do the results in the laboratory, namely, that the material has but little actual value as a source of plant food.

The material does not seem to be effective in preventing injury from insect pests.

Stonemeal.—What has been said regarding the New Mineral Fertilizer applies with equal force to the different grades of stonemeal. Although Stonemeal following Stonemeal seems to have given a small increase in yield of corn, yet when used with lime this is not apparent, the yield being considerably less than on the no fertilizer plat receiving the lime application.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
W. H. Abbott, Holyoke, Mass.				
Abbott's Eagle Brand	N. Hadley	$31.77	560	7.33
“ Onion Fertilizer	N. Hadley	31.09	562	7.29
“ “ “	Sunderland		657	
“ Tobacco Fertilizer	Bradstreet	34.95	71	6.45
“ Tobacco Fertilizer	N. Hadley	34.79	569	5.84
“ “ “	Sunderland		650	
Alphano Humus Co., Whitehall Bldg., New York City.				
Prepared Alphano Humus	Amherst	7.68	273	19.51
Prepared Alphano Humus	N. Attleboro	10.66	1216	24.44
“ “ “	N. Attleboro		1227	
American Agric. Chem. Co., 92 State St., Boston, Mass.				
A. A. Potato Grower	Norton	27.71	1211	10.65
Church's Fish and Potash	Fall River	14.79	314	10.36
“ “ “ “	New Bedford		324	
“ “ “ “	Southwick		1126	
“ “ “ “	W. Springfield		1152	
Complete Tobacco Manure	N. Hadley	26.96	220	7.40
“ “ “	Bradstreet		335	
“ “ “	N. Amherst		941	
“ “ “	Conway		1167	
East India A. A. Ammoniated Superphosphate	New Bedford	18.47	312	12.21
First Year Top Dressing	Conway	28.37	1174	10.91
Grass and Lawn Top Dressing	Millis	18.68	774	8.83
“ “ “ “ “	Norwood		836	
“ “ “ “ “	Wenham		874	
“ “ “ “ “	Worcester		990	
High Grade Fertilizer with 10% Potash	Cushman	22.77	575	8.71
“ “ “ “ “ “	Billerica		777	
“ “ “ “ “ “	Wenham		873	
“ “ “ “ “ “	Southboro		980	
“ “ “ “ “ “	E. Pepperell		1124	
Northwestern Empire Special	Fall River	24.63	284	13.26
Special Grass and Garden Mixture	Bradstreet	39.18	331	13.15
Special Grass and Garden Mixture	Fitchburg	39.83	891	10.46
Special Grass and Garden Mixture	Northboro	37.63	1089	9.35
Special Grass and Garden Mixture	Conway	39.57	1175	11.16
Tobacco Starter and Grower	N. Hadley	25.69	231	8.58
“ “ “ “	Bradstreet		336	
“ “ “ “	Montague		779	
Tobacco Starter and Grower	Southwick	24.44	1136	11.34
Top Dressing for Old Fields	Conway	30.07	1173	11.19
Bradley's Corn Phosphate	Chelmsford	16.37	698	10.69
“ “ “	Millis		776	
“ “ “	Beverly		838	
“ “ “	W. Brookfield		968	
Bradley's Complete Manure for Corn and Grain	N. Hadley	26.37	218	9.49

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.33	.68	1.16	.71	2.88	2.50	.42	9.17	5.56	15.15	12.00	9.59	9.50	10.97*	10.00
1.27	.67	1 18	.59	3.71	3.50	.16	8.29	4.69	13.14	10.00	8.45	7.50	8.91*	7.00
1.52	1.06	1.13	.58	4.29	4.00	.29	7.47	4.26	12.02	10.00	7.76	7.60	11.36*	10.00
1.67	.93	1.10	.60	4.30	4.00	–	8.01	4.21	12.22	10.00	8.01	7.60	11.12*	10.00
.22	.09	.76	1.37	2.44	1.25	none	.40	.14	.54	.50	.40	—	.64	.50
.86	.34	.51	.73	2.44	1.25	—	.79	2.14	2.93	.50	.79	—	1.94†	.50
1.92	.05	1.08	.60	3.65	3.70	4.40	2.69	.49	7.58	8.00	7.09	7.00	10.39	10.00
1.10	.11	.47	.38	2.06	2.06	2.33	4.12	.87	7.32	7.00	6.45	6.00	2.09	2.00
.82	.34	1.95	1.49	4.60	4.53	.55	4.14	.08	4.77	4.00	4.69	3.00	5.83*	5.50
1.13	.48	.55	.24	2.40	2.47	4.24	4.13	2.04	10.41	10.00	8.37	9.00	2.31	2.00
1.95	.20	1.10	.54	3.79	3.70	4.21	3.03	.59	7.83	8.00	7.24	7.00	10.37	10.00
2.85	.16	.35	.20	3.56	3.91	1.76	3.60	.66	6.02	6.00	5.36	5.00	2.23	2.00
1.80	.03	.50	.25	2.58	2.47	2.84	3.31	.87	7.02	7.00	6.15	6.00	10.29	10.00
1.92	.58	.47	.32	3.29	3.29	2.23	5.40	2.17	9.80	9.00	7.63	8.00	7.19	7.00
6.28	.51	.64	.33	7.76	8.23	1.08	5.71	1.17	7.96	8.00	6.79	7.00	7.23	8.00
6.02	.47	.93	.42	7.84	8.23	4.05	3.38	.38	7.81	8.00	7.43	7.00	7.95	8.00
4.64	.53	1.77	.76	7.70	8.23	3.86	4.94	1.02	9.82	8.00	8.80	7.00	3.20	8.00
5.91	.53	.90	.43	7.77	8.23	4.24	3.39	.28	7.91	8.00	7.63	7.00	7.73	8.00
1.68	.23	.99	.42	3.32	3.29	5.78	2.44	1.73	9.95	9.00	8.22	8.00	6.06*	4.00
1.92	.12	.89	.36	3.29	3.29	6.12	2.35	.82	9.29	9.00	8.47	8.00	5.19*	4.00
2.84	.43	1.15	.39	4.81	4.94	3.16	3.94	1.17	8.27	8.00	7.10	7.00	8.20	8.00
1.47	—	.38	.25	2.10	2.06	5.33	2.76	1.12	9.21	9.00	8.09	8.00	2.00	1.50
2.12	.35	.56	.39	3.42	3.29	6.92	1.99	1.63	10.54	9.00	8.91	8.00	7.29	7.00

* No. 560 Chlorine .69% equivalent to .92% potash, 10.05% potash as sulfate.
" 562–657 " .68% " " .90% " 8.01% " " "
" 71 " .64% " " .85% " 10.51% " " "
" 569–650 " .71% " " .95% " 10.17% " " "
† " 1216–1227 Total potash 2.04%.
* " 220-335-941-1167 Chlorine .62% equivalent to .82% potash, 5.01% potash as sulfate. Total potash 6.13%
" 231-336-779 " .55% " " .75% " 5.31% " " " " " 6.10%
" 1136 " .57% " " .75% " 4.44% " " " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
American Agric. Chem. Co.(Continued)				
Bradley's Complete Manure for Corn and Grain	Beverly	$25.66	837	10.73
“ “ “ “ “ “ “	Fitchburg		882	
“ “ “ “ “ “ “	W. Brookfield		969	
Bradley's Complete Man. Potatoes and Veg.	N. Hadley	25.75	219	11.70
“ “ “ “ “ “ “	Bradstreet		332	
“ “ “ “ “ “ “	Millis		773	
Bradleys' Complete Man. for Potatoes and Veg.	Beverly	24.59	839	12.42
Bradley's Complete Man. for Top Dressing	Amesbury	25.80	741	8.52
“ “ “ “ “ “	W. Brookfield		978	
Bradley's Complete Man. with 10% Potash	Norwood	25.21	832	10.59
“ “ “ “ “ “	Beverly		857	
“ “ “ “ “ “	N. Brookfield		973	
Bradley's Eclipse Phosphate for all Crops	Boston	13.49	506	10.53
“ “ “ “ “ “	Amesbury		736	
“ “ “ “ “ “	Millis		759	
“ “ “ “ “ “	Leominster		922	
Bradley's English Lawn Fertilizer	Amesbury	26.12	743	7.10
Bradley's Green Mountain Special	Wilmington	18.79	869	11.70
Bradley's High Grade Fertilizer with 10% Potash	New Bedford	23.21	300	9.38
“ “ “ “ “ “ “	Amesbury		735	
“ “ “ “ “ “ “	W. Brookfield		977	
“ “ “ “ “ “ “	Belchertown		1069	
Bradley's High Grade Potato and Root Special	W. Springfield	21.71	1153	11.75
Bradley's Niagara Phosphate	Sterling	13.05	1029	9.14
“ “ “	W. Springfield		1161	
Bradley's Potato Fertilizer	Amherst	17.31	89	9.57
“ “ “	Amesbury		742	
“ “ “	Millis		775	
“ “ “	Natick		854	
“ “ “	W. Brookfield		970	
“ “ “	Belchertown		1070	
Bradley's Potato Fertilizer	W. Springfield	16.64	1155	9.43
Bradley's Potato Manure	Fall River	19.01	315	10.03
“ “ “	Sunderland		649	
“ “ “	Amesbury		744	
“ “ “	N. Brookfield		995	
Bradley's XL Superphosphate of Lime	Amherst	18.86	72	9.78
“ “ “ “ “	Fall River		316	
“ “ “ “ “	Boston		615	
“ “ “ “ “	Natick		708	
“ “ “ “ “	W. Springfield		1154	
Clark's Cove Bay State Fertilizer	Oakdale	19.99	1114	12.08
Clark's Cove Bay State Fertilizer G. G.	Concord	16.62	531	10.11
“ “ “ “ “ “	Oakdale		1104	
Clark's Cove Great Planet Manure A. A.	Spencer	24.18	1023	13.23

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.92	.69	.44	.40	3.35	3.39	3.57	4.60	1.76	9.93	9.00	8.17	8.00	7.69	7.00
2 12	.34	.66	.32	3.34	3.29	5.14	3.51	1.76	10.41	9.00	8.65	8.00	7.31	7.00
1.91	.14	.56	.56	3.17	3.29	4.31	3.58	1.40	9.29	9.00	7.89	8.00	7.60	7.00
3.30	.06	1.09	.43	4.88	4.94	2.49	1.64	.36	4.40	5.00	4.13	4.00	6.32	6.00
2.33	—	.62	.36	3.31	3.29	3.42	2.53	.61	6.56	7.00	5.95	6.00	10.46	10.00
.21	.17	.41	.27	1.06	1.03	3.67	4.67	1.48	9.82	9.00	8.34	8.00	2.31	2.00
3.74	—	.87	.36	4.96	4.94	2.33	2.36	.26	4.92	5.00	4.69	4.00	6.18	6.00
1.07	.22	.24	.24	1.77	1.65	3.85	4.47	.89	9.21	9.00	8.32	8.00	6.40	5.00
1.78	.09	.48	.26	2.61	2.47	3.42	2.88	.97	7.27	7.00	6.30	6.00	10.41	10.00
.92	.14	.35	.27	1.68	1.65	4.46	3.73	84	9.03	9.00	8.19	8.00	10.48	10.00
.44	.05	.35	.27	1.11	.82	4.63	2.90	1.17	8.70	8.00	7.53	7.00	2.52	1.00
1.24	.18	.36	.24	2.02	2.06	4.76	3.32	1.28	9.36	9 00	8.08	8.00	3.41	3.00
1.38	.23	.28	.20	2.09	2.06	4.21	3.62	1.43	9.16	9.00	7.73	8.00	2.67	3.00
1.67	.17	.46	.26	2.56	2.47	3.10	3.05	1.16	7.30	7.00	6.16	6.00	5.43	5.00
1.61	.18	.65	.26	2.50	2.47	4.69	4.11	1.53	10.33	10.00	8.80	9.00	2.38	2.00
1.54	—	.65	.56	2.75	2.47	4.82	4.39	.66	9.87	10.00	9.21	9.00	2.60	2.00
1.28	—	.68	.31	2.17	2.06	4.76	3.22	.92	8.90	9.00	7.98	8.00	2.13	1.60
1.92	.18	.68	.38	3.06	3.29	3.76	4.68	1.53	9.87	9.00	8.34	8.00	7.17	7.00

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials	Laboratory Number.	Moisture.
American Agric. Chem. Co., (Continued)				
Clark's CovePotato Fertilizer	Concord	$17.19	528	9.26
" " " "	Cushman		576	
Clark's Cove Potato Manure	Spencer	19.35	1026	9.47
" " " "	Oakdale		1102	
Darling's Blood,Bone, and Potash	Worcester	25.24	984	10.39
" " " " "	E. Pepperell		1088	
Darling's Complete Manure with 10% Potash	Barre Plains	24.71	1077	10.36
Darling's Farm Favorite	Billerica	16.95	730	9.69
" " "	Worcester		983	
Darling's General Fertilizer	E. Pepperell	13.59	1125	8.60
Darling's Potato Manure	N. Amherst	19.10	942	12.24
Darling's Potato and Root Crop Manure	Worcester	24.73	1074	12.53
Farquhar's Lawn and Garden Top Dressing	Boston	29.88	614	8.16
Farquhar's Vegetable and Potato Fertilizer	Boston	23.14	613	10.74
Great Eastern Garden Special	E. Pepperell	24.46	951	12.95
Great Eastern General	Norton	13.28	1212	9.27
Great Eastern General	E. Braintree	15.94	1247	12.96
Great Eastern Northern Corn Special	Pratt's Junct.	18.82	1040	11.69
Great Eastern Vegetable, Vine and Tobacco	Chelmsford	19.83	681	13.16
Pacific High Grade Fertilizer	Wayland	25.08	1073	13.93
Pacific Potato Special	Newburyport	18.46	745	12.91
Soluble Pacific Guano	Newburyport	16.75	740	13.11
Packer's Union Corn Fertilizer	Amherst	18.40	1061	15.07
Packer's Union Gardeners' Complete Manure	Concord	26.93	532	5.67
" " " " "	Amherst		1060	
Packer's Union Gardeners' Complete Manure	Southwick	25.05	1142	7.39
Packer's Union Potato Manure	Amherst	19.75	1071	13.90
Packer's Union Universal Fertilizer	Concord	13.55	612	11.81
Quinnipiac Corn Manure	Pittsfield	16.64	1196	10.54
Quinnipiac Market Garden Manure	Fall River	25.09	285	12.95
Quinnipiac Phosphate	Billerica	18.57	729	11.97
Quinnipiac Potato Manure	Billerica	18.35	760	11.76
Quinnipiac Potato Phosphate	Fall River	16.58	295	11.31
Read's Farmers' Friend Superphosphate	Sutton	17.42	1209	11.35
Read's High Grade Farmers' Friend Superphosphate	N. Hadley	24.88	579	11.06
" " " " " "	Newburyport		737	
" " " " " "	Barre Plains		1082	
Read's Practical Potato Special	N. Hadley	12.57	557	9.32
Read's Standard Superphosphate	S. Hadley	14.34	1206	10.05
Read's Vegetable and Vine Fertilizer	N. Hadley	20.64	580	10.49
" " " " "	Barre Plains		1076	
Standard Complete Manure	Northboro	24.71	1080	12.18
Standard Fertilizer	Whitman	16.37	669	10.98
" "	Upton		1012	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.33	.04	.45	.24	2.06	2.06	5.39	2.42	.94	8.75	9.00	7.81	8.00	3.47	3.00
1.58	.09	.41	.33	2.41	2.47	3.44	2.81	1.28	7.53	7.00	6.25	6.00	6.30	5.00
2.30	.15	.63	.55	3.63	4.11	3.16	3.81	1.35	8.32	8.00	6.97	7.00	7.54	7.00
2.08	.45	.42	.25	3.20	3.29	2.40	4.06	.61	7.07	7.00	6.46	6.00	9.79	10.00
1.27	.04	.50	.25	2.06	2.06	4.53	3.51	.89	8.93	9.00	8.04	8.00	3.04	3.00
.41	.14	.36	.33	1.24	1.23	3.95	2.68	1.89	8.52	7.00	6.63	6.00	3.18	3.00
1.56	.13	.59	.30	2.58	2.47	2.49	3.91	1.38	7.78	7.00	6.40	6.00	5.06	5.00
2.28	.07	.68	.27	3.30	3.29	5.29	2.62	1.35	9.26	9.00	7.91	8.00	7.29	7.00
1.90	.59	.59	.34	3.42	3.30	—	9.75	7.29	17.04	14.00	9.75	4.00	8.70	7.00
1.82	.33	.69	.29	3.13	3.00	2.33	3.64	1.25	7.22	7.00	5.97	6.00	8.14	7.00
2.33	.04	.56	.36	3.29	3.29	5.04	3.00	.79	8.83	9.00	8.04	8.00	7.21	7.00
.12	.28	.49	.27	1.16	82	2.71	3.69	1.53	7.93	9.00	6.40	8.00	3.53	4.00
.58	.17	.35	.22	1.32	.82	3.51	4.45	1.25	9.21	9.00	7.96	8.00	4.90	4.00
1.60	.06	.50	.31	2.47	2.47	5.93	3.02	1.10	10.05	10.00	8.95	9.00	2.44	2.00
1.13	.32	.36	.25	2.06	2.06	3.00	4.55	1.66	9.21	9.00	7.55	8.00	6.84	6.00
1.90	.31	.74	.45	3.40	3.29	3.89	3.84	1.33	9.06	9.00	7.73	8.00	7.33	7.00
1.27	.10	.63	.26	2.26	2.06	4.37	3.77	1.12	9.26	9.00	8.14	8.00	3.76	3.00
1.33	—	.64	.28	2.25	2.06	4.02	3.89	1.07	8.98	9.00	7 91	8.00	2.02	1.50
1.74	.08	.38	.20	2.40	2.47	5.04	4.04	1.15	10.23	10.00	9.08	9.00	2.33	2.00
1.09	.35	.89	.40	2.73	2.47	4.31	2.96	1.05	8.32	7.00	7.27	6.00	10.46*	10.00
1.26	.38	.51	.34	2.49	2.47	3.13	3.10	1.68	7.91	7.00	6.23	6.00	10.25*	10.00
1.30	.23	.35	.18	2.06	2.06	4.56	3.91	.97	9.44	9.00	8.47	8.00	6.10	6.00
.12	.24	.35	.21	.92	.82	3.32	4.76	1.79	9.87	9.00	8.08	8.00	3.14	4.00
1.36	.19	.31	.20	2.06	2.06	3.89	4.12	.89	8.90	9.00	8.01	8.00	2.83	1.50
2.09	.52	.44	.25	3.30	3.29	2.61	5.25	2.09	9.95	9.00	7.86	8.00	7.60	7.00
1.58	.03	.52	.35	2.48	2.47	5.74	3.22	.89	9.85	10.00	8.96	9.00	2.17	2.00
1.67	.06	.41	.25	2.39	2.47	3.67	3.33	.99	7.99	7.00	7.00	6.00	4.59	5.00
1.40	.07	.29	.20	1.96	2.06	4.08	3.80	1.28	9.16	9.00	7.88	8.00	3.20	3.00
1.36	—	.43	.30	2.09	2.06	5.36	3.11	.92	9.39	9.00	8.47	8.00	3.00	3.00
2.10	.19	.57	.34	3.20	3.29	2.78	3.35	.94	7.07	7.00	6.13	6.00	10.12	10.00
.14	.09	.36	.25	.84	.82	2.84	3.79	1.43	8.06	5.00	6.63	4.00	4.03	8.00
.28	.16	.31	.28	1.03	.82	4.46	4.04	.66	9.16	9.00	8.50	8.00	3.74	4.00
1.06	.19	.53	.30	2.08	2.06	4.72	3.42	1.20	9.34	9.00	8.14	8.00	7.11	6.00
2.01	.50	.53	.36	3.40	3.29	1.98	5.73	1.40	9.11	9.00	7.71	8.00	7.17	7.00
1.48	—	.32	.29	2.09	2.06	5.10	3.34	.97	9.41	9.00	8.44	8.00	1.82	1.50

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* Nos. 532–1060 Chlorine .74% equivalent to .99% potash, 9.47% potash as sulfate.
" 1142 " .52% " " .67% " 9.58% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
American Agric. Chem. Co., (Concluded)				
Standard Guano for all Crops	Upton	$13.26	1014	9.43
" " " "	Spencer		1024	
Standard Special for Potatoes	Whitman	17.12	660	11.35
" " " "	Upton		1011	
" " " "	Northboro		1081	
Wheeler's Connecticut Tobacco Grower	Southwick	27.99	1135	8.47
Wheeler's Corn Fertilizer	Chelmsford	16.05	680	10.23
" " "	E. Pepperell		960	
Wheeler's Havana Tobacco Grower	Sheffield	24.18	1184	5.99
Wheeler's Havana Tobacco Grower	Danvers	25.55	1228	7.96
Wheeler's Havana Tobacco Grower	Ludlow	25.87	1242	7.91
Wheeler's Potato Manure	E. Pepperell	17.18	956	11.32
Williams and Clark Americus Ammon. Bone Super	Southboro	18.69	979	11.89
Williams and Clark Americus Corn Phosphate	Wenham	16.31	872	12.19
" " " " " "	Wilkinsonville		948	
Williams & Clark Ameri. H. G. Sp. for Pot. & Veg.	Norwood	24.72	824	11.71
" " " " " " " " "	Southboro		1009	
Williams and Clark Americus Potato Manure	Norwood	17.50	830	10.92
" " " " " "	Brockton		842	
" " " " " "	Wilkinsonville		954	
" " " " " "	Southboro		1008	
Williams and Clark Potato Phosphate	Wenham	18.54	875	11.84
Williams and Clark Prolific Crop Producer	Brockton	12.85	845	8.52
Williams and Clark Royal Bone Phosphate	Newburyport	13.33	746	9.67
" " " " " "	Brockton		844	
Armour Fertilizer Works, Baltimore, Md.				
All Soluble	Amherst	24.00	79	7.93
Ammoniated Bone with Potash	S. Framingham	17.31	1072	12.11
" " " "	Gt. Barrington		1180	
Blood, Bone and Potash	Amherst	27.84	78	9.90
Blood, Bone and Potash	N. Hadley	27.12	235	9.91
" " " "	Fall River		304	
" " " "	Seekonk		447	
" " " "	Brockton		488	
Complete Potato	Fall River	17.40	322	7.10
" "	Brockton		487	
" "	Newburyport		739	
Connecticut Valley Tobacco Grower	Amherst	28.10	85	9.97
Connecticut Valley Tobacco Grower	N. Hadley	27.42	234	8.56
" " " "	N. Hadley		525	
" " " "	N. Hadley		549	
Grain Grower	Brockton	16.34	511	11.34
" "	Newburyport		738	
Fish and Potash	Fall River	14.69	321	10.09
" " "	Taunton		358	
" " "	Brockton		486	
Fruit and Root Crop Special	Brockton	18.50	509	9.55
High Grade Potato	Amherst	21.96	107	8.69

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.			
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.07	.22	.49	.35	1.13	1.03	3.61	4.30	1.43	9.34	9.00	7.91	8.00	2.05	2.00
1.36	.08	.34	.29	2.07	2.06	5.01	3.00	.97	8.98	9.00	8.01	8.00	3.20	3.00
1.13	.24	1.98	1.60	4.95	4.52	.64	3.67	.89	5.20	4.00	4.31	3.00	5.60*	5.50
1.26	.03	.44	.26	1.99	1.65	5.10	2.83	.28	8.21	9.00	7.93	8.00	2.60	2.00
.78	.55	.80	.43	2.56	2.47	3.89	2.64	.87	7.40	7.00	6.53	6.00	8.92*	10.00
1.37	.39	.44	.32	2.52	2.47	4.27	2.42	1.96	8.65	7.00	6.69	6.00	10.39*	10.00
1.10	.38	.96	.36	2.80	2.47	4.27	3.18	.74	8.19	7.00	7.45	6.00	9.44*	10.00
1.54	—	.32	.23	2.09	2.06	5.78	2.49	.46	8.73	9.00	8.27	8.00	3.22	3.00
1.54	.16	.42	.36	2.48	2.47	5.49	3.44	.89	9.82	10.00	8.93	9.00	2.36	2.00
1.34	.11	.43	.29	2.17	2.06	3.80	4.06	1.35	9.21	9.00	7.86	8.00	1.80	1.50
1.95	.30	.69	.35	3.29	3.29	3.44	4.44	1.66	9.54	9.00	7.88	8.00	7.18	7.00
1.38	.16	.38	.26	2.18	2.06	4.95	3.16	1.02	9.13	9.00	8.11	8.00	3.04	3.00
1.40	.23	.58	.26	2.47	2.47	2.08	3.94	1.68	7.70	7.00	6.02	6.00	5.08	5.00
.10	.11	.50	.42	1.13	.82	3.83	3.39	1.30	8.52	8.00	7.22	7.00	2.27	1.00
.20	.11	.51	.32	1.14	1.03	3.48	4.38	1.63	9.49	9.00	7.86	8.00	2.15	2.00
1.06	.74	.71	.50	3.01	2.88	4.24	3.51	1.71	9.46	8.50	7.75	8.00	4.54	4.00
.90	.29	.82	.53	2.54	2.47	4.76	1.51	1.05	7.32	6.50	6.27	6.00	2.54	2.00
2.20	.70	.76	.34	4.00	4.11	5.74	2.38	1.17	9.29	8.50	8.12	8.00	7.52	7.00
2.05	.38	.93	.48	3.84	4.11	5.68	2.25	1.15	9.08	8.50	7.93	8.00	7.50	7.00
.31	.47	.43	.39	1.60	1.65	2.74	3.61	1.48	7.83	7.50	6.35	7.00	6.75	6.00
.77	.44	1.99	1.62	4.82	4.52	3.03	1.30	.36	4.69	4.50	4.33	4.00	6.01*	5.50
.88	.43	1.86	1.43	4.60	4.52	3.70	1.45	.54	5.69	4.50	5.15	4.00	5.45*	5.50
.63	.26	.47	.30	1.66	1.65	4.76	2.79	.97	8.52	8.50	7.55	8.00	4.18	2.00
.46	.24	.64	.51	1.85	2.06	4.57	1.55	1.28	7.40	6.50	6.12	6.00	2.36	2.00
.27	.38	.58	.43	1.66	1.65	4.82	3.06	1.76	9.64	8.50	7.88	8.00	5.87	5.00
.65	.41	.35	.30	1.71	1.65	4.88	3.15	1.28	9.31	8.50	8.03	8.00	10.33	10.00

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* No. 1135	Chlorine	.47%	equivalent	to	.62%	potash,	4.98%	potash	as	sulfate.	Total potash 5.89%
" 1184	"	.79%	"	"	1.06%	"	7.86%	"	"	"	
" 1228	"	1.56%	"	"	2.07%	"	8.32%	"	"	"	
" 1242	"	1.93%	"	"	2.56%	"	6.88%	"	"	"	
" 85	"	.63%	"	"	.82%	"	5.19%	"	"	"	
" 234–525–549	"	.56%	"	"	.75%	"	4.70%	"	"	"	Total potash 5.50%

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Armour Fertilizer Works. (Concluded)				
High Grade Potato	Fall River	$21.71	313	8.47
" " "	Taunton		353	
" " "	Brockton		507	
Market Garden Special	Fall River	24.41	320	9.63
" " "	Seekonk		451	
" " "	Brockton		508	
Onion Special	Amherst	28.07	80	11.97
Onion Special	N. Hadley	26.98	236	9.96
" "	Concord		605	
Special Corn Manure	Taunton	21.21	354	10.18
Special Value Fertilizer	W. Barnstable	21.56	1005	10.17
Baugh and Sons Company, Philadelphia, Pa.				
Complete Animal Base Fertilizer	N. Hanover	18.79	808	11.86
" " " "	Marblehead		809	
Economical Truck Guano	N. Hanover	26.94	807	11.06
" " "	Marblehead		810	
Grand Rapid High Grade Guano	N. Attleboro	23.33	721	10.22
" " " " "	N. Hanover		806	
Beach Soap Company, Lawrence, Mass.				
Advance Brand	Lawrence	27.84	592	7.28
Lawn Dressing	Lawrence	27.30	594	7.62
Market Garden	Lawrence	34.13	593	10.00
Reliance Brand	Lawrence	20.54	591	11.68
Seeding Down Fertilizer	Man'f. Sample	32.36	747	6.22
Top Dressing	Lawrence	36.77	590	7.05
Berkshire Fertilizer Co., Bridgeport, Conn.				
Berkshire Ammoniated Bone Phosphate	Upton	16.08	1021	12.64
Berkshire Complete Fertilizer	Sunderland	24.33	128	11.09
Berkshire Complete Fertilizer	Sunderland	22.75	190	11.23
" " "	N. Hadley		233	
" " "	Hadley		427	
" " "	Hadley		444	
Berkshire Complete Tobacco Fertilizer	Bradstreet	24.00	26	8.39
Berkshire Complete Tobacco Fertilizer	Bradstreet	24.30	73	9.24
" " " "	Bradstreet		74	
" " " "	Sunderland		111	
" " " "	N. Hadley		155	
" " " "	N. Hadley		166	
" " " "	Sunderland		186	
" " " "	N. Hadley		197	
" " " "	N. Hadley		208	
" " " "	Bradstreet		330	
Cowls' Mixture	N. Amherst	29.38	338	7.63
Berkshire Economical Grass Fertilizer	N. Hadley	39.52	156	6.29
" " " "	Amherst		162	
" " " "	N. Hadley		169	
" " " "	Seekonk		453	
" " " "	N. Hadley		546	
" " " "	Amherst		565	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.44	.43	.46	.27	1.60	1.65	5.23	2.78	1.07	9.08	8.50	8.01	8.00	10.47	10.00
1.50	.51	.59	.50	3.10	3.29	5.40	2.61	1.30	9.31	8.50	8.01	8.00	7.19	7.00
1.30	.68	.34	.29	2.61	2.47	5.07	6.64	.56	12.27	12.50	11.71	12.00	10.72	10.00
1.33	.33	.47	.34	2.47	2.47	6.63	5.21	.69	12.53	12.50	11.84	12.00	9.65	10.00
.52	.90	.66	.65	2.73	2.88	.93	7.05	1.61	9.59	8.50	7.98	8.00	4.69	4.00
1.33	.13	.64	.46	2.56	2.88	6.31	2.08	1.33	9.72	8.50	8.39	8.00	5.62	6.00
.54	.44	.36	.31	1.65	1.65	5.77	2.73	2.78	11.28	11.00	8.50	8.00	5.25	5.00
2.53	.17	.33	.32	3.35	3.30	5.68	1.59	1.17	8.44	8.00	7.27	6.00	10.68	10.00
1.81	.21	.44	.34	2.80	2.47	6.22	2.02	1.66	9.90	9.00	8.24	8.00	7.02	3.00
.45	1.49	.60	.60	3.14	2.50	2.21	6.13	2.68	11.02	10.00	8.34	8.00	8.14*	6.00
3.82	.13	.11	.19	4.25	4.00	3.28	3.71	2.86	9.85	9.50	6.99	7.50	7.44	5.25
2.54	1.54	.60	.48	5.16	4.74	.80	6.29	1.76	8.85	8.00	7.09	7.00	9.28*	9.75
.21	.90	.51	.42	2.04	1.65	4.44	4.59	3.29	12.32	10.00	9.03	8.00	4.65	3.00
.23	1.22	1.07	.85	3.37	1.85	.32	8.02	6.89	15.23	14.00	8.34	5.00	12.35	14.50
3.62	.41	.58	.46	5.07	5.35	.06	4.92	2.80	7.78	7.00	4.98	4.00	17.56	15.00
.58	.21	.38	.29	1.46	.80	4.72	5.11	.15	9.98	9.00	9.83	8.00	2.93	2.00
1.02	.24	1.07	.59	2.92	2.50	5.68	2.56	1.43	9.67	9.00	8.24	8.00	7.27	6.00
1.13	.10	.99	.55	2.77	2.50	4.40	3.49	1.22	9.11	9.00	7.89	8.00	6.72	6.00
1.11	.43	.93	.30	2.76	2.50	3.16	4.44	1.61	9.21	9.00	7.60	8.00	7.08*	6.00
.97	.30	.86	.60	2.73	2.50	2.59	5.52	1.33	9.44	9.00	8.11	8.00	7.19*	6.00
2.21	.57	.87	.40	4.05	4.00	.35	6.69	1.15	8.19	7.00	7.04	7.00	8.91*	8.00
6.30	.85	.31	.26	7.72	8.00	.23	5.82	3.57	9.62	8.00	6.05	4.00	8.61	8.00

* No. 592 Chlorine .90% equivalent to 1.20% potash, 6.94% potash as sulfate.
" 593 " .74% " " .99% " 8.29% " " "
" 26 " .77% " " 1.03% " 6.05% " " "
" 73–74–111–155–166–186–197–208–330 Chlorine .86% equivalent to 1.14% potash, 6.05% potash as sulfate.
" 338 Chlorine .49% equivalent to .65% potash, 8.26% potash as sulfate.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Berkshire Fertilizer Co., (Concluded)				
Berkshire Fish and Potash	Sunderland	$20.64	131	8.88
Berkshire Fish and Potash	Amherst	20.15	159	7.98
“ “ “ “	N. Hadley		194	
Berkshire Grass Special	Sunderland	27.38	124	11.09
Berkshire Grass Special	Sunderland	25.47	189	10.25
“ “ “	Westfield		1130	
Berkshire Long Island Special	Hadley	26.02	428	10.06
Berkshire Potato and Vegetable Phosphate	Upton	16.06	1022	10.31
Berkshire Tobacco Special, Carbonate of Potash	Amherst	31.33	158	12.46
“ “ “ “ “ “	Sunderland		203	
“ “ “ “ “ “	N. Hadley		227	
C. M. Bolles, Pepperell, Mass.				
Nissitissitt Plant Food	E. Pepperell	30.77	959	7.57
Boston Fertilizer Co., Boston, Mass.				
Boston Humus	E. Lexington	2.82	870	49.08
Boston Plant Life	E. Lexington	7.19	876	9.41
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.				
Bowker's Ammoniated Food for Flowers	Boston	17.72	620	4.59
Bowker's Blood, Bone and Potash	Framingham	26.22	1214	11.75
Bowker's Bone and Wood Ash Fertilizer	Beverly	15.12	850	9.15
“ “ “ “ “ “	Leominster		916	
Bowker's Complete Alkaline Tobacco Grower	Hatfield	25.58	251	7.88
“ “ “ “ “	Northampton		466	
Bowker's Corn Phosphate	Lawrence	15.26	595	10.73
“ “ “	Chelmsford		687	
“ “ “	Norwood		834	
“ “ “	N. Brookfield		992	
Bowker's Early Potato Manure	Ayer	24.59	955	12.82
“ “ “ “	N. Brookfield		993	
Bowker's Farm and Garden Phosphate	Bridgewater	15.67	666	12.19
“ “ “ “ “	Springfield		1160	
Bowker's Square Brand Fish and Potash	Dighton	16.31	377	10.91
Bowker's Gloucester Fish and Potash	Taunton	12.21	375	11.01
“ “ “ “ “	Lawrence		597	
Bowker's Grain and Grass Fertilizer	Leominster	20.70	928	13.00
“ “ “ “ “	Springfield		1157	
Bowker's High Grade Fertilizer	Beverly	19.94	849	11.96
“ “ “ “	Leominster		917	
Bowker's Highly Nitrogenized Mixture	Belchertown	40.43	1205	8.16
Bowker's Hill and Drill Phosphate	Boston	18.57	512	11.96
“ “ “ “ “	Brookfield		967	
Bowker's Lawn and Garden Dressing	Concord	17.65	533	9.11
Bowker's Market Garden Fertilizer	Concord	23.25	603	10.33
“ “ “ “	Chelmsford		679	
“ “ “ “	Natick		707	
“ “ “ “	Springfield		1158	
Bowker's Onion Fertilizer	Hatfield	26.35	247	6.29
“ “ “	Hatfield		252	
“ “ “	Deerfield		402	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.11	.27	1.70	1.00	3.08	2.50	2.36	3.27	1.56	7.19	6.00	5.63	4.00	4.17	3.00
.13	.25	1.60	1.07	3.05	2.50	1.59	3.31	1.94	6.84	6.00	4.90	4.00	4.34	3.00
3.19	.14	1.50	.70	5.53	5.00	3.38	2.36	.64	6.38	5.00	5.74	4.00	3.16	2.00
3.88	.09	.82	.61	5.40	5.00	2.30	1.91	.89	5.10	5.00	4.21	4.00	3.35*	2.00
1.13	.05	1.65	.80	3.63	3.30	5.17	1.47	.38	7.02	8.00	6.64	6.00	8.20	7.00
.98	.47	.31	.31	2.07	1.70	1.12	4.72	.26	6.10	7.00	5.84	6.00	4.61	4.00
.18	1.13	2.24	1.45	5.00	4.50	.93	3.74	.33	5.00	4.00	4.67	3.00	5.74*	5.50
3.14	.40	.55	.32	4.41	4.00	.23	6.69	2.93	9.85	10.00	6.92	4.50	10.91	10.00
.04	.02	.30	.59	.95	1.40	—	—	—	.12	—	—	—	.17	—
.21	.08	.51	.94	1.74	1.60	—	—	—	.61	.50	—	—	1.05*	.50
2.40	.22	.04	.03	2.69	2.47	.42	5.91	1.22	7.55	7.00	6.33	6.00	3.66*	2.00
1.67	.62	.93	.51	3.73	4.11	2.97	4.30	.97	8.24	8.00	7.27	7.00	7.73	7.00
.55	.34	.42	.42	1.73	1.65	1.44	4.76	3.19	9.39	7.00	6.20	6.00	2.89	2.00
.85	.23	1.94	1.20	4.22	4.11	.99	4.52	—	5.51	5.00	5.51	4.00	5.29*	5.00
1.02	.10	.35	.18	1.65	1 65	5.10	3.24	.82	9.16	9.00	8.34	8.00	2.40	2.00
2.11	.27	.55	.36	3.29	3.29	4.69	3.45	.69	8.83	9.00	8.14	8.00	7.21	7.00
1.15	–	.36	.17	1.68	1.65	4.91	3.35	.92	9.18	9.00	8.26	8.00	2.91	2.00
1.13	.37	.50	.35	2.35	2.47	1.47	2.94	1.66	6.07	5.00	4.41	4.00	4.36	4.00
.03	.31	.34	.16	.84	.82	3.70	4.82	1.66	10.18	9.00	8.52	8.00	1.38	1.00
1.45	.41	.52	.26	2.64	2.47	5.17	3.07	1.48	9.72	9.00	8.24	8.00	4.46	4.00
1.44	.17	.56	.33	2.50	2.47	5.39	2.75	1.10	9.24	9.00	8.14	8.00	4.46	4.00
4.82	.46	1.82	.66	7.76	8.23	3.10	3.91	1.05	8.06	8.00	7.01	7.00	8.39	8.00
1.70	.07	.46	.24	2.47	2.47	5.78	3.17	1.00	9.95	10.00	8.95	9.00	2.27	2.00
2.27	.19	.23	.17	2.86	3.29	1.06	3.38	.41	4.85	5.00	4.44	4.00	5.06	5.00
1.51	.46	.43	.28	2.68	2.47	2.71	3.54	1.10	7.35	7.00	6.25	6.00	10.00	10.00
1.32	.08	.77	.34	2.51	2.47	6.35	3.98	1.66	11.99	11.00	10.33	10.00	8.04*	8.00

* No. 189–1130 Chlorine 2.13% equivalent to 2.83% potash, .52% potash as sulfate.
" 158–203–227 " .67% " " .89% " .81% " " " 4.04% potash as carbonate. Total potash 6.53%.

* No. 876 Chlorine .16% equivalent to .22% potash, .83% potash as sulfate.
" 620 " 2.23% " " 2.96% " .70% " " "
" 251–466 " .63% " " .84% " 4.45% " " "
" 247–252–402 " .94% " " 1.25% " 6.79% " " " Total potash 5.35%

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Bowker Fertilizer Co. (Concluded)				
Bowker's Potato and Vegetable Fertilizer	Norwood	$19.57	835	12.89
Bowker's Potato and Vegetable Phosphate	Dighton	14.82	374	11.39
" " " " "	Bridgewater		658	
" " " " "	Chelmsford		688	
" " " " "	N. Brookfield		994	
Bowker's Pulverized Sheep Manure	Taunton	14.15	345	14.01
" " " "	Beverly		848	
Bowker's Soluble Animal Fertilizer	Fall River	20.50	276	13.41
" " " "	Dighton		370	
Bowker's Sure Crop Phosphate	Lawrence	12.08	598	11.30
" " " "	Leominster		929	
Stockbridge Sp. Com. Man for Corn and All Gr. Crops.	Taunton	26.54	363	12.57
" " " " " " " " " "	Northampton		467	
" " " " " " " " " "	Bridgewater		665	
" " " " " " " " " "	Natick		706	
" " " " " " " " " "	Deerfield		935	
" " " " " " " " " "	Brookfield		965	
" " " " " " " " " "	Spencer		1030	
Stockbridge Sp. Com. Man. for Potatoes and Veg.	Fall River	24.30	277	11.14
" " " " " " " "	Dighton		369	
" " " " " " " "	Deerfield		411	
" " " " " " " "	Bridgewater		664	
" " " " " " " "	Norwood		828	
" " " " " " " "	Natick		853	
" " " " " " " "	Leverett		940	
" " " " " " " "	Sterling		1094	
Stkbdge.Sp.Com.Man.for Seed.Down Perm.Dress & Leg	Dighton	28.30	378	10.12
" " " " " " " " " "	Natick		855	
Stockbridge Sp. Com. Man. for Top. Dress. & Forc.	Hatfield	26.36	253	11.40
" " " " " " " "	Fall River		319	
" " " " " " " "	Dighton		373	
" " " " " " " "	Northampton		463	
Stockbridge Sp. Com. Man. for Top Dress. & Forc.	Concord	25.10	611	10.72
" " " " " " " "	Bridgewater		667	
" " " " " " " "	Norwood		831	
" " " " " " " "	Brookfield		966	
" " " " " " " "	Springfield		1159	
Stockbridge Sp. Com. Man. for Tobacco	N. Grafton	30.47	1013	8.06
Joseph Breck & Sons, Corp., Boston, Mass.				
Breck's Lawn and Garden Dressing	Boston	23.16	481	9.63
Breck's Market Garden Manure	Boston	20.24	501	12.99
Breck's Ram's Head Brand Sheep Manure	Boston	13.30	484	6.56
Breck's Ram's Head Brand Sheep Manure	S. Framingham	11.47	1096	7.37
Carter's Tested Seeds, Inc., Boston, Mass.				
Carter's Anti-Clover Manure	Man'f. Sample	32.94	33	9.55
Carter's Anti-Clover Manure	Boston	32.09	800	14.89
Carter's Complete Grass Manure	Man'f. Sample	28.90	32	6.36

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.35	.16	.66	.36	2.53	2.47	4.66	3.25	1.20	9.11	9.00	7.91	8.00	4.05	4.00
.90	.13	.36	.26	1.65	1.65	4.82	3.27	.94	9.03	9.00	8.09	8.00	1.98	2.00
.15	.27	.57	1.24	2.23	2.06	—	—	—	2.25	1.25	—	—	3.74†	1.00
1.69	.20	.53	.28	2.70	2.47	5.29	3.20	1.84	10.33	9.00	8.49	8.00	3.65	4.00
.08	.29	.38	.19	.94	.82	3.42	4.31	1.58	9.31	9.00	7.73	8.00	1.96	2.00
2.14	.36	.57	.26	3.33	3.29	5.55	4.94	1.48	11.97	11.00	10.49	10.00	6.63	7.00
2.07	.32	.52	.23	3.14	3.29	1.98	4.17	1.40	7.55	7.00	6.15	6.00	9.52	10.00
1.15	.40	.90	.35	2.80	2.47	8.29	3.44	2.30	14.03	11.00	11.73	10.00	7.13*	8.00
3.17	.27	.88	.43	4.75	4.94	2.81	1.94	1.17	5.92	5.00	4.75	4.00	6.49	6.00
3.28	.34	.87	.37	4.86	4.94	1.31	2.87	.46	4.64	5.00	4.18	4.00	5.58	6.00
1.21	.47	1.69	.62	3.99	5.76	3.35	2.98	1.02	7.35	5.00	6.33	4.00	10.76*	10.00
2.48	.28	.70	.32	3.78	4.11	2.87	2.79	.64	6.30	6.00	5.66	5.00	6.05	5.00
1.66	.10	.59	.36	2.71	2.47	7.08	2.97	.97	11.02	10.00	10.05	9.00	1.90	2.00
.22	.54	.54	1.27	2.57	2.25	—	—	—	1.51	1.50	—	—	2.19†	1.50
.23	.33	.47	1.17	2.20	2.25	—	—	—	1.51	1.50	—	—	1.82†	1.50
5.89	.54	.22	.11	6.76	6.58	5.40	1.56	1.56	8.52	7.00	6.96	4.50	4.22	2.00
6.44	.08	.21	.12	6.85	6.58	4.97	1.66	1.15	7.78	7.00	6.63	4.50	3.72	2.00
3.14	.48	.79	.40	4.81	4.52	6.48	4.72	2.22	13.42	12.00	11.20	10.00	1.91	1.25

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† Potash Figured at 5 cents per pound.

* No. 378–855 Chlorine .74% equivalent to 1.00% potash, 6.13 % potash as sulfate.

" 1013 " 1.76% " " 2.34% " 8.42% " " " Total potash 10.78%

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Carter's Tested Seeds, Inc., (Concluded)				
Carter's Complete Grass Manure	Boston	$26.37	847	11.22
Carter's General Purpose Manure	Man'f. Sample	23.13	35	10.79
Carter's General Purpose Manure	Boston	23.35	846	17.09
Carter's Worm Eradicating Fertilizer	Man'f. Sample	11.34	34	8.22
The E. D. Chittenden Co., Bridgeport, Ct.				
Chittenden's Complete Tobacco and Onion Grower	Hatfield	26.52	44	8.08
“ “ “ “ “ “	Sunderland		185	
“ “ “ “ “ “	N. Hadley		198	
“ “ “ “ “ “	Hadley		437	
“ “ “ “ “ “	Seekonk		457	
Chittenden's Complete Tobacco and Onion Grower	N. Amherst	26.22	104	7.99
Chittenden's Complete Tobacco and Onion Grower	Concord	24.97	601	9.93
“ “ “ “ “ “	Leominster		914	
“ “ “ “ “ “	Saundersville		945	
Chittenden's Special Formula Fish and Potash	Leominster	17.69	921	15.04
“ “ “ “ “ “	Charlton		974	
Chittenden's Grain and Vegetable	Fall River	24.08	323	16.19
“ “ “ “	Concord		527	
Chittenden's Grass and Grain Fertilizer	Fall River	27.88	290	11.92
Chittenden's Grass and Grain Fertilizer	Saundersville	28.12	961	7.68
Chittenden's Potato and Grain	Seekonk	26.96	461	10.37
Chittenden's Potato and Grain	Leominster	24.33	915	15.46
“ “ “ “	Saundersville		946	
Chittenden's Potato Special	Fall River	25.07	287	15.42
Chittenden's Potato Special	Saundersville	25.25	944	14.76
Chittenden's 10% Potato	Fall River	26.44	286	13.73
Chittenden's Tobacco Special	N. Amherst	25.86	41	9.96
Chittenden's Tobacco Special	N. Hadley	26.06	167	10.42
“ “ “	Hadley		440	
“ “ “	Sunderland		652	
“ “ “	N. Hatfield		696	
The Clark Refining Co., 75 State St., Boston, Mass.				
The Farmer's Friend Liquid Fertilizer	Boston	.77	841	92.22
Clay and Sons, Stratford, London, Eng.				
Clay's London Fertilizer	Boston	20.84	494	10.53
“ “ “	Boston		586	
Coe-Mortimer Co., 51 Chambers St., New York City.				
E. Frank Coe's Blood, Bone and Potash	Billerica	27.57	731	11.81
E. Frank Coe's Celebrated Potato Fertilizer	Westfield	17.32	1128	13.09
“ “ “ “ “	S. Williamstown		1186	
E. Frank Coe's Columbian Corn and Potato Fert.	Westfield	15.05	1079	12.99
“ “ “ “ “ “ “	Gilbertville		1107	
E. Frank Coe's Complete Manure with 10% Potash	Easthampton	21.81	261	12.49
“ “ “ “ “ “ “	Gilbertville		1105	
E. Frank Coe's Connecticut Wrapper Grower	Easthampton	34.13	259	9.48
E. Frank Coe's Double Strength Potato Manure	Medway	30.00	67	7.19
E. Frank Coe's Double Strength Potato Manure	Easthampton	27.30	258	11.00
“ “ “ “ “ “	W. Springfield		750	
“ “ “ “ “ “	Brookfield		971	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
2.56	.46	.70	.40	4.12	4.52	6.60	3.94	3.62	14.16	12.00	10.54	10.00	1.63	1.25
2.65	—	.44	.25	3.34	3.29	7.25	2.22	.79	10.26	6.00	9.47	5.00	3.11*	2.00
3.58	—	.35	.28	4.21	3.29	5.93	1.88	.56	8.37	6.00	7.81	5.00	2.11*	2.00
.10	.09	.70	1.38	2.27	1.50	.66	—	.26	.92	.50	.66	.40	1.91*	1.06
2.12	.55	.56	.44	3.67	3.30	6.29	1.95	1.48	9.72	9.00	8.24	8.00	5.83*	5.00
2.25	.16	.53	.52	3.46	3.30	5.90	2.72	1.38	10.00	9.00	8.62	8.00	6.11*	5.00
2.16	.19	.64	.45	3.44	3.30	5.87	2.93	.92	9.72	9.00	8.80	8.00	5.21*	5.00
1.55	.35	.22	.38	2.50	2.47	4.24	1.71	1.07	7.02	7.00	5.95	6.00	4.05	4.00
1.56	.89	.21	.33	2.99	2.47	6.48	1.96	1.15	9.59	9.00	8.44	8.00	6.86	6.00
3.26	.37	.24	.26	4.13	4.00	7.02	1.45	1.05	9.52	7.00	8.47	6.00	7.29	5.00
2.52	.66	.61	.48	4.27	4.00	6.54	1.34	.46	8.34	7.00	7.88	6.00	7.29	5.00
2.60	.25	.42	.42	3.69	3.30	6.44	2.90	.94	10.28	9.00	9.34	8.00	7.02	6.00
1.92	.26	.55	.49	3.22	3.30	6.22	2.07	.89	9.18	9.00	8.29	8.00	6.63	6.00
2.06	.41	.41	.37	3.25	3.30	6.48	1.82	.99	9.29	9.00	8.30	8.00	7.42	7.00
1.74	.33	.73	.55	3.35	3.30	5.49	2.34	1.10	8.93	9.00	7.83	8.00	7.48	7.00
1.70	.42	.73	.46	3.31	3.30	5.74	1.41	.99	8.14	7.00	7.15	6.00	9.81	10.00
1.70	.24	1.31	1.54	4.79	4.30	1.38	1.69	1.66	4.77	4.00	3.07	3.00	5.08*	5.50
2.13	.43	.88	1.17	4.61	4.30	1.89	2.27	.74	4.90	4.00	4.16	3.00	5.78*	5.50
.02	.09	—	—	.11	.11	.03	—	—	.03	.039	.03	.039	.41	.25
2.30	.10	1.13	.82	4.35	4.00	.26	3.05	6.33	9.64	7.00	3.31	1.12	.06	.08
1.83	.31	1.38	.59	4.11	4.11	3.80	3.40	1.30	8.50	8.00	7.20	7.00	7.48	7.00
.64	.45	.45	.28	1.82	1.65	3.29	4.31	1.66	9.26	9.00	7.60	8.00	4.42	4.00
.85	—	.29	.21	1.35	1.23	5.80	3.24	.94	9.98	9.50	9.04	8.50	2.62	2.50
1.46	.42	.31	.28	2.47	2.47	2.08	3.58	1.66	7.32	7.00	5.66	6.00	9.58	10.00
2.32	.20	2.27	.76	5.55	5.76	2.68	3.60	.56	6.84	6.00	6.28	5.00	8.55*	10.00
2.34	.40	.81	.34	3.89	3.70	4.46	3.27	1.84	9.57	8.00	7.73	7.00	11.08	10.00
2.01	.26	.91	.35	3.53	3.70	3.74	3.33	1.53	8.60	8.00	7.07	7.00	10.12	10.00

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* No. 35	Chlorine	.21%	equivalent to	.27%	potash, 2.84%	potash as sulfate.	
" 846	"	.34%	" "	.44%	" 1.67%	" " "	
" 34	"	.19%	" "	.25%	" 1.66%	" " "	
" 44–185–198–437–457	"	.63%	" "	.84%	" 4.99%	" " "	
" 104	"	.30%	" "	.40%	" 5.71%	" " "	
" 601–914–945	"	1.31%	" "	1.75%	" 3.46%	" " "	
" 41	"	.49%	" "	.66%	" 4.42%	" " "	Total potash 5.10%
" 167–440–652–696	"	.92%	" "	1.22%	" 4.56%	" " "	" " 5.87%
" 259	"	.72%	" "	.95%	" 7.60%	" " "	" " 8.62%

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Coe-Mortimer Co., (Concluded)				
E. Frank Coe's Double Strength Top Dressing	Auburn	$36.16	988	14.03
E. Frank Coe's Double Strength Top Dressing	Royalston	37.74	1251	14.03
E. Frank Coe's Excelsior Potato Fertilizer	Williamsburg	22.55	1204	12.35
E. Frank Coe's Gold Brand Excelsior Guano	Gilbertville	21.32	1106	12.48
“ “ “ “ “ “	Baldwinville		1176	
E. Frank Coe's H. G. Ammoniated Superphos	Westfield	17.07	1078	13.85
“ “ “ “ “	Lee		1183	
E. Frank Coe's Ideal Tobacco Fertilizer	Hadley	26.60	1199	9.03
E. Frank Coe's New Englander Corn and Potato Fert.	Sheffield	13.46	1189	11.33
E. Frank Coe's Red Brand Excelsior Guano	Billerica	24.79	732	13.56
“ “ “ “ “ “	W. Springfield		748	
E. Frank Coe's Special Grass Top Dressing	Easthampton	23.46	260	10.26
E. Frank Coe's Standard Potato Fertilizer	Warren	25.64	1101	12.41
E. Frank Coe's Extra Spec. Potato Fert. and Fruit Gr	S. Williamstown	20.36	1185	11.06
E. Frank Coe's Tobacco and Onion	W. Springfield	28.60	753	8.12
E. Frank Coe's XXV Ammoniated Phosphate	Becket	12.81	1224	15.64
Consumer's Fertilizer Co., 42 St. & Brdw'y., New York.				
“Mak Gro”, Odorless Plant Food	Boston	25.31	711	8.47
Eastern Chem. Co., 37 Pittsburg St., Boston, Mass.				
I M P Plant Food	Boston	93.93	621	.65
Essex Fertilizer Co., 39 N. Market St., Boston, Mass.				
Essex Comp. Man. for Corn, Grain and Grass	S. Lowell	25.60	641	4.96
“ “ “ “ “ “ “ “	Billerica		816	
Essex Comp. Man. for Potatoes, Roots and Veg.	Taunton		357	
“ “ “ “ “ “ “ “	N. Amherst	26.40	552	4.33
“ “ “ “ “ “ “ “	Easthampton		705	
Essex Comp. Man. for Potatoes, Roots and Veg.	Spencer	25.52	1025	6.90
Essex Fertilizer for Grass and Top Dressing	Taunton	28.00	366	7.17
Essex Market Garden and Potato Manure	Billerica	18.72	815	8.70
Essex Market Garden and Potato Manure	Spencer	18.86	1028	10.42
“ “ “ “ “ “	Sterling		1037	
Essex Potato Grower with 10% Potash	Spencer	23.07	1033	11.92
Essex Special Corn Fertilizer	S. Lowell	17.76	631	7.93
Essex Special Potato Phosphate	S. Lowell	21.50	638	8.61
Essex Special Potato Phosphate	Sterling	22.28	1036	11.16
Essex Special Tobacco Manure	N. Amherst	32.19	551	5.94
Essex XXX Fish and Potash	Taunton		367	
“ “ “ “ “	N. Amherst	18.52	550	7.24
“ “ “ “ “	Easthampton		700	
Essex XXX Fish and Potash	Sterling		1017	
“ “ “ “ “	Spencer	18.60	1027	10.69
“ “ “ “ “	Webster		1119	
R. & J. Farquhar & Co., Boston, Mass.				
Pulverized Sheep Manure	Boston	8.39	36	25.64
Pulverized Sheep Manure	Boston	6.78	618	36.99
John Glennie, Ward Hill, Mass.				
Complete Fertilizer	Ward Hill	30.94	871	9.24
C. W. Hastings, Dorcester, Mass.				
Ferti Flora	Boston	16.37	840	82.96

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
5.28	.15	.82	.47	6.72	8.23	3.95	3.80	.31	8.06	8.00	7.75	7.00	8.00	8.00
3.79	2.43	.66	.30	7.18	8.23	1.55	5.24	.89	7.68	8.00	6.79	7.00	7.57	8.00
1.58	.31	.36	.25	2.60	2.47	5.40	2.08	1.48	8.96	8.00	7.48	7.00	8.30	8.00
1.73	.14	.43	.27	2.57	2.47	4.95	3.04	1.17	9.16	9.00	7.99	8.00	6.21	6.00
.91	.29	.37	.36	1.93	1.85	4.50	3.49	1.58	9.57	9.00	7.99	8.00	3.28	3.00
.39	.04	2.29	1.74	4.46	4.53	.46	4.57	.28	5.31	4.00	5.03	3.00	5.60*	5.50
.18	.11	.48	.25	1.02	.82	3.51	4.45	1.61	9.57	9.00	7.96	8.00	2.79	3.00
1.90	.38	.73	.26	3.27	3.29	3.89	4.20	1.58	9.67	9.00	8.09	8.00	7.11	7.00
4.24	.58	.11	.10	5.03	4.94	1.88	2.03	.84	4.75	5.00	3.91	4.00	3.43	3.00
1.95	.43	.61	.24	3.23	3.29	1.57	4.40	2.45	8.42	7.00	5.97	6.00	10.37	10.00
.78	.36	.19	.15	1.48	1.65	4.67	3.77	1.02	9.46	9.00	8.44	8.00	9.29	10.00
1.37	.49	.92	.44	3.22	3.29	3.25	6.77	.26	10.28	7.00	7.03	—	8.74*	8.00
.16	.26	.33	.27	1.02	.82	3.41	4.22	1.84	9.47	9.00	7.63	8.00	2.17	2.00
2.56	.04	.03	.02	2.65	2.47	7.46	2.05	.13	9.64	10.00	9.51	8.00	8.28*	8.00
13.22	—	—	—	13.22	13.50	26.32	.21	—	26.53	26.00	26.53	26.00	26.44†	24 6
1.23	.98	.71	.37	3.29	3.28	4.25	1.69	.74	6.68	7.00	5.94	6.00	10.04	10.00
1.24	1.19	.58	.41	3.42	3.28	4.25	1.93	.48	6.66	7.00	6.18	6.00	10.31	10.00
1.13	1.03	.70	.34	3.20	3.28	4.50	1.85	.61	6.96	7.00	6.35	6.00	9.94	10.00
2.10	.92	.76	.37	4.15	4.10	5.08	1.91	.59	7.58	8.00	6.99	7.00	8.41	8.00
1.02	.41	.37	.26	2.06	2.00	6.10	1.70	1.10	8.90	9.00	7.80	8.00	5.00	5.00
.91	.56	.37	.19	2.03	2.00	5.68	2.54	.56	8.78	9.00	8.22	8.00	5.16	5.00
1.19	.64	.47	.29	2.59	2.46	4.57	1.68	.64	6.89	7.00	6.25	6.00	9.96	10.00
.81	.65	.36	.25	2.07	2.00	5.65	2.85	.71	9.21	9.00	8.50	8.00	3.16	3.00
1.03	.58	.47	.38	2.46	2.46	5.93	2.10	1.28	9.31	9.00	8.03	8.00	6.24	6.00
1.14	.77	.44	.34	2.69	2.46	6.43	1.55	1.38	9.36	9.00	7.98	8.00	6.11	6.00
1.71	.93	.98	.52	4.14	4.00	3.00	4.48	1.86	9.34	7.00	7.48	6.00	10.39*	10.00
.90	.76	.36	.25	2.27	2.00	5.65	2.41	1.28	9.34	9.00	8.06	8.00	3.35	3.00
.78	.81	.40	.27	2.26	2.00	5.80	2.16	1.38	9.34	9.00	7.96	8.00	3.45	3.00
—	—	—	—	1.43	1.13	—	—	—	.97	.82	—	—	2.12**	1.80
.14	—	.27	.72	1.13	1.13	—	—	—	.82	.82	—	—	1.80**	1.80
.31	1.71	.92	.58	3.52	3.50	2.42	12.09	3.55	18.06	18.00	14.51	14.00	4.27*	4.00
2.93	.11	—	—	3.04	3.25	3.32	—	—	3.32	3.66	3.32	3.66	3.35**	3.30

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* No. 1199 Chlorine 1.26% equivalent to 1.68% potash, 3.92% potash as sulfate. Total potash 5.95%
" 753 " 1.25% " " 1.67% " 7.07% " " "
" 711 " .63% " " .84% " 7.44% " " "
† " 621 Potash as nitrate valued at 5 cents per pound.
* " 551 Chlorine 1.26% equivalent to 1.68% potash, 8.71% potash as sulfate. Total potash 10.44%
** Potash figured at 5 cents per pound.
* No. 871 Chlorine .54% equivalent to .72% potash, 3.55% potash as sulfate.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Thomas Hersom & Co., New Bedford, Mass.				
Hersom's Neverfail Fertilizer	New Bedford	$31.91	326	6.74
International Agric. Corp., Buffalo, N. Y. Buffalo Fertilizer Works Branch.				
Farmer's Choice	W. Boylston	15.83	1120	11.98
“ “	Lee		1182	
High Grade Manure	N. Amherst	26.61	61	10.36
High Grade Manure	Hatfield	30.37	242	9.22
High Grade Manure	Fall River	26.62	279	12.42
“ “ “	N. Hadley		522	
High Grade Manure	Hadley	26.28	791	14.20
“ “ “	Hadley		798	
“ “ “	W. Boylston		1115	
New England Special	N. Hadley	18.91	548	13.72
“ “ “	Chelmsford		690	
“ “ “	Millis		770	
“ “ “	S. Sudbury		1083	
“ “ “	W. Boylston		1103	
Onion Formula	N. Hadley	25.01	148	14.65
“ “	N. Amherst		151	
“ “	N. Hadley		443	
“ “	Amherst		566	
“ “	Amherst		572	
“ “	Hadley		799	
Tobacco Producer	N. Amherst	28.65	152	11.20
“ “	N. Amherst		184	
“ “	N. Hadley		524	
“ “	N. Hadley		547	
“ “	Amherst		564	
“ “	Amherst		571	
“ “	N. Hadley		578	
Buffalo 2-8-10	N. Amherst	22.67	55	9.10
Buffalo 2-8-10	Hadley	21.62	790	13.25
“ “ “ “	S. Sudbury		1084	
Top Dresser	N. Amherst	29.53	59	8.77
Top Dresser	N. Amherst	29.10	149	13.48
“ “	N. Hadley		523	
“ “	Hadley		796	
Vegetable and Potato	Millis	22.15	769	12.72
“ “ “	S. Sudbury		1085	
Johnson Seed Potato Co., Leominster, Mass.				
Ideal Potato Manure, Hoeing Brand	Leominster	25.47	924	13.38
Ideal Potato Manure, Planting Brand	Leominster	27.28	919	10.19
Lister's Agric. Chemical Works, Newark, N. J.				
Lister's Celebrated Onion Fertilizer	S. Deerfield	24.90	627	15.71
Lister's Complete Tobacco Manure	Montague	24.30	780	11.70
“ “ “ “	Amherst		821	
Lister's High Grade Special for Spring Crops	Webster	22.00	1113	12.36
Lister's 4-8-7 Potato Manure	Man'f. Sample	25.05	1232	11.93

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
2.20	.23	1.21	.63	4.27	4.00	3.64	4.43	3.16	11.23	10.50	8.07	6.00	10.62	10.00
.14	.16	.30	.36	.96	.80	4.59	3.72	1.79	10.10	9.00	8.31	8.00	5.43	5.00
1.62	.70	.54	.38	3.24	3.30	2.20	4.57	2.67	9.44	8.00	6.77	7.00	10.16	10.00
1.77	1.12	.57	.23	3.69	3.30	3.64	4.22	1.99	9.85	8.00	7.86	7.00	10.56*	10.00
1.76	.84	.42	.34	3.36	3.30	2.33	4.64	2.32	9.29	8.00	6.97	7.00	9.79	10.00
1.82	.70	.32	.44	3.28	3.30	1.28	5.58	1.61	8.47	8.00	6.86	7.00	10.41	10.00
.88	.20	.33	.30	1.71	1.60	4.63	4.30	2.07	11.00	10.00	8.93	9.00	5.41	5.00
1.99	.24	.28	.17	2.68	2.40	6.89	3.32	1.02	11.23	11.00	10.21	10.00	8.10	8.00
1.70	.56	1.51	.94	4.71	4.50	1.95	4.12	1.71	7.78	5.00	6.07	5.00	5.72*	5.50
.75	.32	.35	.41	1.83	1.60	5.14	3.43	1.48	10.05	9.00	8.57	8.00	10.02	10.00
.91	.59	.18	.17	1.85	1.60	2.78	5.26	1.30	9.34	9.00	8.04	8.00	9.65	10.00
4.49	.62	.51	.25	5.87	5.70	.64	4.68	1.98	7.30	7.00	5.32	6.00	5.27	5.00
3.58	.95	.37	.37	5.27	5.70	.89	6.00	1.71	8.60	7.00	6.89	6.00	5.52	5.00
1.40	.50	.28	.28	2.46	2.40	3.42	4.64	2.09	10.15	9.00	8.06	8.00	7.21	7.00
2.07	.11	.34	.42	2.94	3.28	6.80	1.21	.36	8.37	8.00	8.01	8.00	9.30*	10.00
1.91	.34	.35	.61	3.21	3.28	6.86	1.73	.26	8.85	8.00	8.59	8.00	9.42*	10.00
1.88	.48	.46	.43	3.24	3.29	5.59	2.12	1.63	9.34	9.00	7.71	8.00	7.52	7.00
1.88	.39	1.03	.81	4.11	4.11	1.63	2.78	1.25	5.66	5.00	4.41	4.00	5.45*	5.00
.87	.35	.23	.20	1.65	1.65	3.99	4.30	1.07	9.36	9.00	8.29	8.00	10.79	10.00
1.84	.59	.39	.35	3.17	3.29	6.35	2.48	1.43	10.26	9.00	8.83	8.00	6.90	7.00

* No. 242 Chlorine 3.70% equivalent to 4.91% potash, 5.65% potash as sulfate.
" 152–184+ " .59% " " .79% " 4.93% " " " Total potash 5.83%
" 924 " 4.83% " " 6.42% " 2.88% " " "
" 919 " 4.36% " " 5.80% " 3.62% " " "
" 780–821 " .91% " " 1.21% " 4.24% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Lister's Agric. Chem. Works. (Concluded)				
Lister's Corn Fertilizer	Hadley	$15.16	423	15.42
" " "	Fall River		450	
" " "	S. Deerfield		623	
" " "	Amherst		817	
" " "	Williamstown		1193	
Lister's Special Potato Fertilizer	Fall River	16.79	449	13.40
" " " "	Amherst		818	
" " " "	Natick		1097	
" " " "	Williamstown		1194	
Lister's Special Tobacco Fertilizer	Hadley	19.97	1065	13.69
Lister's Standard Grass Fertilizer	Hadley	19.17	425	17.04
Lister's Success Fertilizer	Hadley	14.80	424	14.10
" " "	Natick		1098	
" " "	Webster		1112	
Lister's 10% Potato Grower	S. Deerfield	25.96	626	12.77
" " " "	Amherst		819	
Lister's 10% Potato Grower	Montague	28.54	784	11.96
Lowell Fertilizer Co., Boston, Mass.				
Lowell Animal Brand	Sunderland	19.87	204	11.60
" " "	New Bedford		296	
" " "	Raynham		347	
" " "	S. Deerfield		622	
" " "	Sunderland		655	
" " "	Marblehead		802	
" " "	Woburn		811	
Lowell Apple Tree Special	S. Lowell	23.61	636	9.91
Lowell Bone Fert. for Corn, Grain, Grass and Veg.	S. Lowell	15.94	716	12.97
" " " " " " " " "	Millis		765	
" " " " " " " " "	Woburn		813	
" " " " " " " " "	Spencer		1032	
" " " " " " " " "	Sterling		1039	
Lowell Corn and Vegetable	S. Lowell	24.77	640	12.01
" " " "	Beverly		852	
Lowell Dissolved Bone and Potash	Millis	17.64	772	12.02
" " " " "	Milford		1018	
Lowell Empress Brand for Corn, Potatoes and Grain	S. Lowell	13.47	643	9.88
" " " " " " " "	Saundersville		962	
" " " " " " " "	Milford		1020	
" " " " " " " "	Spencer		1031	
" " " " " " " "	Sterling		1038	
Lowell Lawn Dressing	New Bedford	25.33	310	3.74
" " "	Concord		607	
Lowell Market Garden Manure	Raynham	26.19	349	11.28
" " " "	Taunton		364	
" " " "	Woburn		734	
" " " "	Fitchburg		884	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.29	.49	.29	.28	1.35	1.23	5.36	2.75	.97	9.08	9.00	8.11	8.00	3.33	3.00
.66	.40	.45	.33	1.84	1.65	4.06	3.88	1.53	9.47	9.00	7.94	8.00	3.31	3.00
.27	.64	.72	.58	2.21	2.06	5.65	2.97	1.89	10.51	9.00	8.62	8.00	3.60*	3.00
1.20	.40	.51	.43	2.54	2.47	5.68	3.23	1.73	10.64	10.00	8.91	9.00	2.00	2.00
.64	.15	.29	.25	1.33	1.23	5.65	3.07	.87	9.59	10.00	8.72	9.00	2.62	2.00
1.95	.41	.48	.48	3.32	3.29	3.00	3.04	1.63	7.67	7.00	6.04	6.00	10.50	10.00
1.56	.72	.82	.50	3.60	3.29	3.83	2.60	1.99	8.42	7.00	6.43	6.00	11.38	10.00
1.32	.55	.28	.25	2.40	2.46	6.44	2.03	.61	9.08	9.00	8.47	8.00	4.55	4.00
.84	1.31	.48	.42	3.05	3.00	3.83	2.71	.94	7.48	7.00	6.54	6.00	7.77	8.00
.86	.29	.27	.26	1.68	1.64	6.06	2.00	1.05	9.11	9.00	8.06	8.00	3.04	3.00
1.34	.74	.69	.43	3.20	3.28	6.48	1.63	.92	9.03	9.00	8.11	8.00	7.00	7.00
.95	.22	.44	.28	1.89	1.64	7.40	2.58	1.02	11.00	10.00	9.98	9.00	2.00	2.00
.54	.39	.25	.22	1.40	1.24	5.14	2.13	.59	7.86	8.00	7.27	7.00	2.21	2.00
4.03	.09	.07	.06	4.25	4.10	5.20	1.94	.18	7.32	8.00	7.14	7.00	6.09	6.00
2.12	.77	.70	.52	4.11	4.10	5.52	1.68	.74	7.94	8.00	7.20	7.00	6.03	6.00

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* **No. 1065** Chlorine 1.20% equivalent to 1.60% potash, 2.00% potash as sulfate.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Lowell Fertilizer Co., (Concluded)				
Lowell Potato Grower with 10% Potash	Beverly	$25.59	856	11.83
Lowell Potato Manure	S. Lowell	15.59	635	9.97
" " "	Norwood		833	
" " "	Saundersville		943	
" " "	Spencer		1034	
" " "	Sterling		1095	
Lowell Potato Phosphate	Raynham	21.77	351	12.52
" " "	Millis		767	
" " "	Beverly		858	
Lowell Grass Mixture for Top Dressing and Lawns	Norwood	26.42	823	11.75
Lowell Special Potato Fertilizer with 10% Potash	Raynham	22.60	352	10.13
Lowell Sterling Phosphate	Sterling	14.29	1035	9.99
" " "	Gt. Barrington		1188	
Lowell Superior with 10% Potash	Raynham	28.02	350	9.99
" " " " "	Seekonk		454	
" " " " "	Concord		604	
James E. McGovern, Andover, Mass.				
Andover Animal Fertilizer	S. Lawrence	25.61	596	8.58
Mapes' Formula and Peruvian Guano Co., N. Y. City.				
Mapes' Average Soil Complete Manure	Fitchburg	26.62	888	11.71
" " " " "	Conway		1163	
Mapes' Cauliflower and Cabbage Manure	Boston	25.56	498	13.45
" " " " "	Worcester		911	
Mapes' Cereal Brand	Pittsfield	16.43	1191	11.77
Mapes' Complete Manure for General Use	Man'f. Sample	24.06	1240	9.93
Mapes' Complete Manure with 10% Potash	Enfield	21.61	1066	10.74
Mapes' Corn Manure	Taunton	22.64	362	11.23
" " "	Northampton		469	
" " "	Boston		490	
" " "	Fitchburg		881	
" " "	Springfield		1156	
Mapes' Economical Potato Manure	Boston	27.20	493	9.31
" " " "	Fitchburg		886	
" " " "	Enfield		1068	
Mapes' Fruit and Vine Manure	Worcester	23.22	896	10.31
Mapes' Grass and Grain Spring Top Dressing	Taunton	28.12	356	3.47
" " " " " " "	Northampton		472	
" " " " " " "	Fitchburg		885	
Mapes' Lawn Top Dressing	Taunton	14.65	348	14.13
Mapes' Potato Manure	Taunton	27.46	355	10.44
" " "	Northampton		468	
" " "	Fitchburg		887	
" " "	Springfield		1151	
" " "	Conway		1165	
Mapes' Tobacco Ash Constituents	Southwick	28.39	1201	6.97

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.57	.70	.62	.39	3.28	3.28	4.56	1.64	.69	6.89	7.00	6.20	6.00	10.06	10.00
.79	.16	.36	.35	1.66	1.64	5.27	1.59	.59	7.45	8.00	6.86	7.00	4.17	4.00
1.22	.55	.44	.35	2.56	2.46	6.25	1.98	.92	9.15	9.00	8.23	8.00	6.16	6.00
2.01	1.02	.64	.51	4.18	4.10	4.97	2.02	.82	7.81	8.00	6.99	7.00	6.14	6.00
1.22	.48	.43	.33	2.46	2.46	4.57	1.65	.41	6.63	7.00	6.22	6.00	10.18	10.00
.04	.47	.20	.16	.87	.82	5.01	3.41	.59	9.01	9.00	8.42	8.00	4.30	4.00
1.57	.75	.60	.59	3.69	3.69	5.33	1.77	.71	7.81	8.00	7.10	7.00	10.21	10.00
.33	1.04	1.30	1.06	3.73	3.00	.23	9.62	—	9.85	8.00	9.85	5.00	4.19	3.00
3.77	.21	.23	.27	4.48	4.12	.57	6.93	.92	8.42	8.00	7.50	7.00	5.15*	5.00
3.42	.13	.34	.32	4.21	4.12	.96	5.49	.74	7.19	6.00	6.45	6.00	7.05	6.00
.13	.83	.47	.41	1.84	1.65	.48	5.67	3.06	9.21	8.00	6.15	6.00	3.93	3.00
3.17	—	.12	.27	3.56	3.29	.73	8.09	2.25	11.07	10.00	8.82	8.00	5.06	4.00
1.43	.27	.38	.37	2.45	2.06	.29	4.23	1.73	6.25	5.00	4.52	3.00	10.72	10.00
1.87	.14	.32	.37	2.70	2.47	.74	7.48	2.27	10.49	10.00	8.22	8.00	7.09	6.00
2.72	.28	.36	.34	3.70	3.29	.48	5.13	1.30	6.91	6.00	5.61	4.00	9.52*	8.00
1.19	.16	.34	.27	1.96	1.65	.83	6.55	.99	8.37	7.00	7.38	5.00	10.08*	10.00
4.17	.39	.30	.28	5.14	4.94	.23	5.44	.99	6.66	6.00	5.67	5.00	7.02	7.00
2.46	.07	.07	.05	2.65	2.47	.86	2.33	.69	3.88	3.50	3.19	2.00	3.60	2.50
2.90	.45	.29	.25	3.89	3.71	1.34	6.80	.87	9.01	8.00	8.14	8.00	7.23*	6.00
.06	.14	.23	.19	.62	.50	.13	2.82	3.16	6.11	5.70	2.95	—	15.59*	15.00

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* No. 888–1163 Chlorine .61% equivalent to .81% potash, 4.34% potash as sulfate.
" 493–886–1068 " .66% " " .87% " 8.65% " " "
" 896 " .69% " " .92% " 9.16% " " "
" 355–468+ " .74% " " .99% " 6.24% " " "
" 1201 " 1.06% " " 1.42% " 2.40% " " "
11.77% potash as carbonate. Total potash 16.96%.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Mapes' Formula and Peruvian Guano Co. (Concluded)				
Mapes' Tobacco Manure Wrapper Brand	Northampton	$37.22	470	8.18
“ “ “ “ “	S. Deerfield		628	
“ “ “ “ “	Conway		1162	
Mapes' Tobacco Starter Improved	S. Deerfield	26.96	629	10.90
“ “ “ “	Conway		1172	
Mapes' Top Dresser Improved Full Strength	Boston	44.61	491	9.17
Mapes' Top Dresser Improved Half Strength	Man'f. Sample	18.00	1241	11.47
Mapes' Vegetable or Complete Manure for Lt. Soils	Northampton	32.43	471	12.41
“ “ “ “ “ “ “	Boston		492	
“ “ “ “ “ “ “	S. Deerfield		625	
The Mitchell Fertilizer Co., Tremley, N. J.				
Mitchell's Vegetable Fertilizer	Swansea	25.58	456	10.48
National Fertilizer Co., 92 State St., Boston, Mass.				
Chittenden's Ammoniated Bone Phosphate	Leominster	16.21	913	10.07
Chittenden's Complete Grass Fertilizer	Bradstreet	24.99	328	13.30
“ “ “ “	Leominster		912	
Chittenden's Complete Root and Grain Fert.	Bradstreet	24.45	106	12.37
“ “ “ “ “ “	Sunderland		117	
“ “ “ “ “ “	Sunderland		187	
“ “ “ “ “ “	Sunderland		215	
“ “ “ “ “ “	N. Amherst		723	
Chittenden's Complete Root and Grain Fert.	Hadley	24.13	442	13.67
“ “ “ “ “	Leominster		923	
Chittenden's Complete Tobacco Fertilizer	Bradstreet	25.91	69	7.84
“ “ “ “	N. Hadley		143	
“ “ “ “	N. Hadley		178	
“ “ “ “	Sunderland		216	
“ “ “ “	Hatfield		245	
“ “ “ “	Bradstreet		327	
“ “ “ “	Bradstreet		329	
“ “ “ “	Hadley		431	
Chittenden's Connecticut Valley Tobacco Grower	S. Deerfield	30.95	1140	12.94
Chittenden's Eureka Potato Fertilizer	Leominster	22.28	920	9.72
“ “ “ “	Saundersville		947	
“ “ “ “	Charlton		976	
“ “ “ “	S. Framingham		1091	
Chittenden's Fish and Potash	Hadley	20.39	432	14.22
“ “ “ “	Hadley		446	
“ “ “ “	N. Amherst		555	
“ “ “ “	W. Springfield		778	
Chittenden's High Grade Top Dressing	Dudley	40.42	1108	13 63
Chittenden's High Grade Special Tobacco Fertilizer	S. Deerfield	34 54	1141	7.67
Chittenden's Market Garden Fertilizer	N. Westport	21.24	390	14.11
Chittenden's Potato Phosphate	N. Westport	20.60	393	13.87
Chittenden's Premium Tobacco Grower	Hatfield	32.93	1056	8.18

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
3.30	.49	1.61	.85	6.25	6.18	—	4.85	.79	5.64	4.50	4.85	—	10.91*	10.50
1.77	.72	1.24	.86	4.59	4.12	.10	8.70	.66	9.46	8.80	8.80	6.00	2.95*	1.00
8.37	.63	.21	.14	9.35	9.88	.45	8.27	.59	9.31	8.00	8.72	5.00	6.09*	4.00
3.75	.02	.08	.08	4.11	4.94	.32	2.43	1.28	4.03	4.00	2.75	2.50	1.57*	2.00
3.63	.43	.66	.62	5.34	4.94	.67	6.81	1.40	8.88	8.00	7.48	6.00	7.34*	6.00
1.92	.34	.75	.37	3.38	3.29	6.89	1.73	1.51	10.13	9.00	8.62	8.00	6.71	6.00
1.06	.14	.39	.28	1.87	1.65	5.20	3.11	.87	9.18	9.00	8.31	8.00	2.54	2.00
2.00	.27	1.32	.56	4.15	4.11	2.61	3.97	1.05	7.63	7.00	6.58	6.00	5.06	5.00
2.03	.23	.63	.44	3.33	3.29	3.83	4.13	1.73	9.69	9.00	7.96	8.00	6.55	6.00
2.09	.48	.54	.22	3.33	3.29	3.06	5.59	.87	9.52	9.00	8.65	8.00	6.03	6.00
2.10	.16	.78	.45	3.49	3.29	6.57	2.41	.89	9.87	9.00	8.98	8.00	5.56*	5.00
.69	.54	2.65	.87	4.75	4.04	.51	3.19	2.09	5.79	4.00	3.70	3.00	9.24*	8.00
1.29	.20	.57	.35	2.41	2.47	2.68	3.49	.74	6.91	7.00	6.17	6.00	10.19	10.00
1.22	.48	.73	.48	2.91	2.88	2.46	3.86	1.79	8.11	7.00	6.32	6.00	4.69	4.00
6.05	.56	.87	.48	7.96	8.23	3.57	3.93	.15	7.65	8.00	7.50	7.00	8.24	8.00
3.05	.46	1.38	.63	5.52	5.76	4.21	1.91	.69	6.81	6.00	6.12	5.00	9.65*	10.00
1.67	.09	.49	.31	2.56	2.47	4.69	3.50	.92	9.11	9.00	8.19	8.00	6.09	6.00
1.48	.25	.28	.27	2.28	2.06	4.31	3.81	.94	9.06	9.00	8.12	8.00	6.61	6.00
1.83	1.48	1.03	1.02	5.36	5.50	1.21	7.56	.18	8.95	5.50	8.77	5.25	6.05*	6.25

*	No. 470-628-1162	Chlorine	1.07%	equivalent to	1.43%	potash,	9.48%	potash as sulfate.		Total potash	10.93%
"	629–1172	"	.54%	" "	.72%	"	2.23%	" " "		" "	3.06%
"	491	"	.71%	" "	.95%	"	5.14%	" " "			
"	1241	"	.34%	" "	.45%	"	1.12%	" " "			
"	471–492–625	"	.66%	" "	.87%	"	6.47%	" " "			
"	69–143+	"	.73%	" "	.98%	"	4.58%	" " "			
"	1140	"	.92%	" "	1.23%	"	8.01%	" " "		Total potash	9.35%
"	1141	"	1.54%	" "	2.05%	"	7.60%	" " "			
"	1056	"	.54%	" "	.72%	"	5.33%	" " "		Total potash	6.19%

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
National Fertilizer Co. (Concluded)				
Chittenden's Tobacco Special with Carbonate Potash	N. Hadley.....	$29.12	160	10.92
" " " " " " "	Hadley........		433	
" " " " " " "	Hadley........		435	
" " " " " " "	Hadley........		438	
" " " " " " "	N. Amherst....		722	
Chittenden's Tobacco Special with Sulphate Potash	Hatfield.......	27.67	47	7.70
" " " " " " "	Sunderland....		213	
" " " " " " "	Hadley........		429	
Chittenden's Tobacco Special with Sulphate Potash	Bradstreet.....	27.01	88	7.92
Chittenden's Tobacco Special with Sulphate Potash	Sunderland....	27.51	1138	7.79
Chittenden's Tobacco Special with Sulphate Potash	S. Deerfield....	26.71	1139	10.70
Chittenden's XXX Fish and Potash	N. Hadley.....	18.72	230	12.00
" " " " "	N. Westport		389	
" " " " "	Charlton......		975	
Natural Guano Co., Aurora, Ill.				
Sheep's Head Pulverized Sheep Manure	Fitchburg.....	12.52	892	8.32
" " " " "	Worcester.....		897	
" " " " "	Brookfield		964	
New England Fertilizer Co., 40 A N. Market St, Boston				
New England Complete Manure with 10% Potash ...	Brockton......	25.40	514	7.98
" " " " " " " ...	S. Lowell......		646	
" " " " " " " ...	Barre Plains...		1075	
New England Corn and Grain Fertilizer.............	Man'f. Sample	13.48	1237	6.37
New England Corn Phosphate.....................	Brockton......	15.87	513	11.60
New England High Grade Potato Fertilizer..........	Man'f. Sample	22.02	1236	8.23
New England High Grade Special with 10% Potash	S. Lowell......	27.42	634	11.66
New England Market Garden Manure..............	Brockton......	26.20	510	10.88
New England Perfect Tobacco Grower..............	S. Lowell......	26.71	685	5.13
New England Potato Grower with 10% Potash......	Brockton......	23.43	515	11.22
New England Potato Fertilizer.....................	S. Lowell......	15.97	645	8.44
New England Superphosphate for all Crops..........	Man'f. Sample	20.24	1235	8.45
New England Special for Onions..................	Sunderland....	25.02	116	4.90
Olds and Whipple, Hartford, Conn.				
O. & W. Corn and Potato Fertilizer................	Hatfield.......	24.43	49	11.66
O. & W. Complete Grass Fertilizer..................	Hatfield.......	25.73	53	9.63
O. & W. Complete Onion Fertilizer	Hatfield.......	26.41	54	11.07
" " " "	N. Hadley.....		439	
" " " "	N. Amherst....		554	
" " " "	N. Hadley.....		559	
O. & W. Complete Tobacco Fertilizer...............	Hatfield.......	29.74	43	7.61
" " " "	Bradstreet...		86	
" " " "	N. Hadley.....		144	
" " " "	N. Hadley.....		154	
" " " "	Hadley........		225	
" " " "	N. Hadley.....		228	
" " " "	N. Hadley.....		441	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.92	.81	1.58	1.37	4.68	4.33	.89	3.70	.13	4.72	4.00	4.59	3.00	5.95*	5.50
.81	.30	1.86	1.44	4.41	4.53	.89	4.44	.08	5.41	4.00	5.33	3.00	6.74*	5.50
.95	.50	1.77	1.52	4.74	4.53	.80	3.13	.15	4.08	4.00	3.93	3.00	5.97*	5.50
.90	.38	2.07	1.24	4.59	4.53	.80	3.61	.77	5.18	4.00	4.41	3.00	6.40*	5.50
.99	.09	2.01	1.44	4.53	4.53	.89	3.85	.54	5.28	4.00	4.74	3.00	5.66*	5.50
1.06	.47	.74	.39	2.66	2.47	2.48	3.62	1.45	7.55	6.00	6.10	5.00	4.09	3.00
.31	.24	.51	1.25	2.31	2.25	—	—	—	1.68	1.25	—	—	2.17†	1.50
1.23	1.00	.61	.32	3.16	3.28	4.12	2.39	.48	6.99	7.00	6.51	6.00	10.00	10.00
.49	.45	.22	.21	1.37	1.23	4.34	2.47	1.02	7.83	8.00	6.81	7.00	2.66	2.00
.81	.36	.26	.22	1.65	1.64	5.97	2.14	1.02	9.13	9.00	8.11	8.00	3.04	3.00
1.69	.62	.24	.16	2.71	2.46	5.74	2.55	.79	9.08	9.00	8.29	8.00	6.16	6.00
1.97	.17	.84	.55	3.53	3.69	5.49	1.55	.51	7.55	8.00	7.04	7.00	10.58	10.00
1.99	.79	.65	.50	3.93	4.10	4.66	2.15	.79	7.60	8.00	6.81	7.00	7.29	7.00
1.98	.73	.60	.36	3.67	4.10	1.28	4.49	.61	6.38	5.00	5.77	4.00	8.82*	6.00
1.30	.48	.48	.33	2.59	2.46	4.34	2.12	.56	7.02	7.00	6.46	6.00	10.35	10.00
.74	.40	.29	.26	1.69	1.64	5.17	1.85	.79	7.81	8.00	7.02	7.00	4.21	4.00
1.28	.62	.37	.30	2.57	2.46	5.96	1.98	1.68	9.62	9.00	7.94	8.00	4.22	4.00
2.17	.54	.51	.42	3.64	4.10	1.37	5.03	.74	7.14	5.00	6.40	4.00	6.78*	6.00
1.25	.51	.67	.82	3.25	3.30	.51	6.65	2.25	9.41	6.00	7.16	6.00	7.27	6.00
1.76	.56	.55	.83	3.70	3.30	.28	6.61	2.22	9.11	7.00	6.89	6.00	7.40	6.00
1.44	.64	.74	.88	3.70	3.30	.26	6.28	3.44	9.98	7.00	6.54	6.00	7.77	6.50
.95	1.17	1.44	1.21	4.77	4.50	.10	3.78	—	3.88	3.00	3.88	3.00	6.10*	5.50

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* No. 160–433+ Chlorine .50% equivalent to .67% potash, 2.30% potash as sulfate, 2.98% potash as carbonate, total potash 6.24%.
No. 47-213-429 Chlorine .61% equivalent to .81% potash, 5.93% potash as sulfate, total potash 6.89%
" 88 " .59% " " .79% " 5.18% " " "
" 1138 " .64% " " .85% " 5.55% " " " total potash 6.43%
" 1139 " .48% " " .64% " 5.02% " " " " " 5.72%

† Potash figured at 5 cents per pound.

* No. 685 Chlorine .81% equivalent to 1.07% potash, 7.75% potash as sulfate.
" 116 " .74% " " .99% " 5.79% " " "
" 43–86+ " .53% " " .72% " .99% " " " 4.39% potash as carbonate, total potash 6.35%.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Olds and Whipple (Concluded)				
O. & W. Complete Tobacco Fertilizer	Feeding Hills.	$30.35	1004	7.95
O. & W. High Grade Potato Fertilizer	Hatfield	29.87	692	14.84
O. & W. Special Onion Fertilizer	N. Hadley	25.62	183	8.34
“ “ “ “	Sunderland		341	
Parmenter and Polsey Fert. Co., 40 N. Market St., Bos.				
P. & P. A. A. Brand	S. Lowell	27.57	639	7.48
P. & P. Aroostook Special with 10% Potash	Man'f. Sample	27.21	1239	5.92
P. & P. Maine Potato Fertilizer with 10% Potash	Man'f. Sample	25.73	1238	4.53
P. & P. Plymouth Rock Brand	S. Lowell	19.15	642	8.83
P. & P. Potato Fertilizer	Millis	16.07	766	7.57
P. & P. Potato Grower with 10% Potash	S. Lowell	22.54	632	7.75
P. & P. Special Potato Fert. for Potatoes and Roots	S. Lowell	25.57	637	8.97
P. & P. Star Brand Superphosphate	S. Lowell	15.19	644	7.37
R. T. Prentiss, Granby, Mass.				
R. T. Prentiss Complete for Potatoes	Holyoke	28.51	92	8.29
“ “ “ “ “	Easthampton		704	
R. T. Prentiss Complete Top Dressing	Holyoke	31.48	93	11.68
“ “ “ “ “	Easthampton		703	
The Pulverized Manure Co., Chicago, Ill.				
Wizard Pulverized Sheep Manure	Amherst	11.90	83	8.75
“ “ “ “	Fall River		289	
“ “ “ “	Taunton		359	
“ “ “ “	Concord		602	
Wizard Brand Shredded Cattle Manure	Taunton	10.16	361	9.31
The Rogers Manufacturing Co., Rockfall, Ct.				
All Round Fertilizer	Worcester	17.84	906	6.92
Complete Potato and Vegetable Fertilizer	Norwood	23.26	822	9.10
“ “ “ “ “	Worcester		907	
High Grade Comp. Corn and Onion Manure	N. Amherst	26.46	653	7.06
“ “ “ “ “ “ “	N. Amherst		583	
“ “ “ “ “ “ “	Fitchburg		877	
High Grade Grass and Grain Fertilizer	Deerfield	34.46	399	8.40
“ “ “ “ “ “	Hadley		577	
High Grade Fertilizer for Oats and Top Dressing	Bradstreet	35.49	70	6.38
“ “ “ “ “ “ “ “	Sunderland		212	
“ “ “ “ “ “ “ “	Deerfield		412	
“ “ “ “ “ “ “ “	N. Hadley		517	
“ “ “ “ “ “ “ “	N. Amherst		574	
“ “ “ “ “ “ “ “	Deerfield		933	
High Grade Soluble Tobacco Manure	Deerfield	36.67	397	8.24
High Grade Soluble Tobacco and Potato Manure	Deerfield	30.31	407	6.00
“ “ “ “ “ “ “	Deerfield		422	
“ “ “ “ “ “ “	N. Hadley		516	
“ “ “ “ “ “ “	N. Amherst		581	
“ “ “ “ “ “ “	S. Deerfield		697	
“ “ “ “ “ “ “	Fitchburg		889	
High Grade Tobacco Grower	Deerfield	29.06	414	6.11

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.87	1.39	1.11	1.55	4.92	4.50	.26	2.95	.18	3.39	3.00	3.21	3.00	6.55*	5.50
1.44	.17	1.12	.91	3.64	3.30	1.72	6.07	2.14	9.93	6.00	7.79	6.00	10.79*	10.00
.94	.56	.93	.59	3.02	2.45	—	8.42	2.83	11.25	—	8.42	8.00	6.74*	6.00
2.58	.25	.98	.36	4.17	4.10	5.49	1.40	.56	7.45	8.00	6.89	7.00	8.22	8.00
1.98	.74	.51	.29	3.52	3.69	4.69	2.43	.94	8.06	8.00	7.12	7.00	10.16	10.00
1.56	.85	.50	.27	3.18	3.28	4.27	2.13	1.25	7.65	7.00	6.40	6.00	10.27	10.00
1.56	.38	.29	.25	2.48	2.46	5.61	2.52	.26	8.39	9.00	8.13	8.00	4.05	4.00
.85	.33	.20	.17	1.55	1.64	4.08	2.43	.48	6.99	7.00	6.51	6.00	5.91	6.00
1.35	.27	.46	.29	2.47	2.46	4.08	2.24	.59	6.91	7.00	6.32	6.00	10.01	10.00
1.40	.88	.61	.42	3.31	3.28	5.49	3.19	.61	9.29	9.00	8.68	8.00	7.21	7.00
.79	.30	.27	.23	1.59	1.64	4.82	2.15	.33	7.30	8.00	6.97	7.00	4.09	4.00
2.53	.17	.43	.32	3.45	3.29	7.50	1.61	.82	9.93	9.00	9.11	8.00	10.25	10.00
4.44	.27	.37	.37	5.45	5.76	5.78	1.14	.48	7.40	7.00	6.92	6.00	8.24	8.00
.36	.14	.52	1.18	2.20	1.80	—	—	—	1.53	1.00	—	—	2.31†	1.00
.20	.21	.49	1.24	2.14	1.80	—	—	—	1.07	1.00	—	—	1.07†	1.00
.65	.17	.64	.46	1.92	1.65	6.29	3.04	.87	10.20	10.00	9.33	8.00	2.87	2.00
.62	.34	1.37	.59	2.92	2.25	1.40	7.27	3.47	12.14	10.00	8.67	8.00	4.71	5.00
1.68	.14	1.08	.59	3.49	3.60	2.21	6.13	3.04	11.38	8.00	8.34	6.00	7.19	7.00
.22	.09	2.06	.70	3.07	3.00	—	12.24	6.66	18.90	16.00	12.24	—	12.70	12.50
4.34	.50	.84	.57	6.25	6.30	1.21	6.47	1.48	9.16	9.00	7.68	7.00	8.57	7.50
1.44	.39	2.35	.91	5.09	5.00	—	6.64	1.71	8.37	7.00	6.64	5.00	11.88*	10.50
1.48	.29	1.45	.65	3.87	3.50	.45	6.62	2.42	9.49	9.00	7.07	7.00	9.65*	8.75
.97	.30	1.96	1.91	5.14	4.10	.32	3.53	.18	4.03	4.00	3.85	3.00	6.57*	5.00

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* No. 1004 Chlorine .45% equivalent to .58% potash, 1.66% potash as sulfate, 4.31% potash as carbonate, total potash 6.67%.

* No. 692 Chlorine 5.71% equivalent to 7.60% potash, 3.19% potash as sulfate.
" 183–341 " .75% " " 1.00% " 5.74% " " "

† Potash figured at 5 cents per pound.

* No. 397 Chlorine .77% equivalent to 1.02% potash, 10.86% potash as sulfate.
" 407–422+ " .84% " " 1.12% " 8.53% " " "
" 414 " .57% " " .76% " 5.81% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
The Rogers Manufacturing Co. (Concluded)				
High Grade Tobacco Grower Veg. and Carb. Formula	Hadley	$32.10	1198	11.65
High Grade Tobacco Grower with Sulfate	Sunderland	29.33	217	7.62
" " " " " "	Deerfield		401	
" " " " " "	Deerfield		409	
" " " " " "	Deerfield		410	
" " " " " "	N. Amherst		582	
The Rogers and Hubbard Co., Middletown, Ct.				
Hubbard's "Bone Base" All Soil All Crop Phosphate	Hadley	26.58	797	12.34
Hubbard's "Bone Base" Complete Phosphate	E. Milton	18.66	826	11.67
" " " " "	Enfield		1067	
Hubbard's "Bone Base" New Market Garden Phos.	Montague	21.86	781	7.75
" " " " " " "	W. Peabody		862	
Hubbard's "Bone Base" Oats and Top Dressing	Deerfield	42.40	403	4.19
" " " " " " "	Seekonk		460	
" " " " " " "	Hadley		788	
" " " " " " "	W. Peabody		860	
" " " " " " "	Deerfield		932	
Hubbard's "Bone Base" Potato Phosphate	N. Westport	20.47	394	14.51
Hubbard's "Bone Base" Seeding Down and Fruit	W. Peabody	31.56	859	8.93
Hubbard's "Bone Base" Soluble Corn and Gen. Crps.	N. Hadley	22.83	147	10.42
" " " " " " " "	Montague		783	
" " " " " " " "	Hadley		792	
" " " " " " " "	W. Peabody		865	
Hubbard's "Bone Base" Soluble Tobacco Manure	Hadley	37.35	789	11.69
Hubbard's "Bone Base" Soluble Potato Manure	Montague	31.43	782	14.41
" " " " " "	Hadley		793	
" " " " " "	W. Peabody		861	
Tobacco Special	N. Hadley	26.38	165	7.34
" "	Deerfield		405	
" "	Hadley		787	
Ross Brothers' Co., 88 Front St., Worcester, Mass.				
Corn, Grain and Grass Fertilizer	Worcester	24.14	903	13.02
High Grade Potato Fertilizer	Worcester	25.38	895	12.30
Potato and Vegetable Fertilizer	Worcester	18.86	901	13.08
Spring Grass Top Dressing	Man'f. Sample	30.66	1230	7.19
Worcester Special Lawn Dressing Fertilizer	Worcester	20.09	902	13.47
F. S. Royster Guano Co., Baltimore, Md.				
Royster's Champion Crop Compound	N. Woburn	17.75	868	13.43
Royster's Complete Potato Manure	W. Springfield	24.72	771	10.40
Royster's Complete Potato Manure	N. Woburn	24.42	864	11.21
Royster's Complete Potato Manure	Greenfield	24.49	1170	9.87
Royster's Gold Seal Potato	Hatfield	22.11	249	12.72
" " " "	Westfield		1145	
" " " "	Greenfield		1168	
" " " "	Lee		1179	
Royster's High Grade Tobacco	Westfield	33.40	1150	10.96
Royster's Ideal Tobacco Guano	Westfield	26.44	1149	10.06

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.83	.89	2.02	1.42	5.16	5.00	1.28	3.44	.41	5.13	4.00	4.72	3.00	5.83*	5.50
1.08	.34	2.04	1.71	5.17	5.00	.96	2.56	.59	4.11	4.00	3.52	3.00	6.78*	5.50
2.43	.40	.37	.36	3.56	3.30	4.53	4.24	1.56	10.33	9.00	8.77	8.00	7.58	7.00
.58	—	.62	.31	1.51	1.50	5.59	3.67	1.35	10.61	8.00	9.26	7.00	5.76	5.00
1.01	.24	.43	.27	1.95	2.00	3.00	3.83	1.79	8.62	7.00	6.83	6.00	10.48	10.00
7.50	.49	.38	.23	8.60	8.50	.17	6.67	1.22	8.06	8.00	6.84	4.50	9.22	8.00
.91	.21	.58	.30	2.00	2.00	6.09	3.73	1.53	11.35	10.00	9.82	9.00	5.19	5.00
.13	.62	1.09	.54	2.38	2.20	.19	12.08	5.15	17.42	16.00	12.27	6.50	13.08	12.00
1.08	.38	.75	.46	2.67	2.50	1.98	4.76	1.22	7.96	8.00	6.74	6.00	8.74	8.00
2.28	.58	1.35	.82	5.03	5.00	1.06	7.39	2.04	10.49	10.00	8.45	7.00	11.78*	10.00
2.85	.65	.87	.51	4.88	5.00	1.53	7.63	1.84	11.00	10.00	9.16	7.00	6.24*	5.00
.26	.70	2.02	1.29	4.27	4.10	.26	4.97	.97	6.20	5.50	5.23	3.00	5.45*	5.00
1.54	.56	.42	.39	2.91	2.88	5.78	2.46	.74	8.98	8.50	8.24	8.00	7.81	8.00
1.45	.37	.50	.41	2.73	2.88	5.93	2.34	.61	8.88	8.50	8.27	8.00	10.19	10.00
.36	.25	.62	.43	1.66	1.65	6.00	2.50	.48	8.98	8.50	8.50	8.00	6.26	5.00
4.05	.36	.71	.31	5.43	5.76	4.21	2.34	.54	7.09	6.50	6.55	6.00	7.54	8.00
.90	.46	.71	.50	2.57	2.88	5.55	2.66	1.05	9.26	8.50	8.21	8.00	3.82	4.00
.92	.21	.31	.31	1.75	1.65	4.18	4.39	.92	9.49	8.50	8.57	8.00	4.79	4.00
1.53	—	.77	.63	2.93	3.29	4.72	2.42	.51	7.65	6.50	7.14	6.00	9.78	10.00
1.65	.27	.50	.49	2.91	3.29	4.60	2.49	.59	7.68	6.50	7.09	6.00	9.61	10.00
1.47	—	.78	.64	2.89	3.29	4.67	2.53	.54	7.74	6.50	7.20	6.00	9.57	10.00
1.02	—	.40	.31	1.73	1.65	5.52	2.98	.71	9.21	8.50	8.50	8.00	10.43	10.00
2.24	.31	1.24	1.13	4.92	4.94	3.74	2.27	.50	6.51	5.50	6.01	5.00	10.41*	10.00
1.33	.13	1.45	1.20	4.11	4.11	3.19	2.07	.33	5.59	4.50	5.26	4.00	6.82*	6.00

* No. 1198 Chlorine .53% equivalent to .71% potash, .58% potash as sulfate, 4.54% potash as carbonate. Total potash 6.40%.
" 217–401+ Chlorine .41% equivalent to .55% potash, 6.23% potash as sulfate.
" 789 " 1.34% " " 1.78% " 10.00% " " "
" 782–793+ " 1.36% " " 1.81% " 4.43% " " "
" 165–405+ " .63% " " .84% " 4.61% " " " Total potash 6.15%
" 1150 " .90% " " 1.20% " 9.21% " " " " " 10.43%
" 1149 " 1.00% " " 1.33% " 5.49% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
F. S. Royster Guano Co. (Concluded)				
Royster's Imperial Formula	N. Adams	$14.32	1192	12.08
Royster's Practical Truck Guano	Hatfield	20.45	50	12.11
" " " "	Hatfield		250	
" " " "	N. Woburn		863	
Royster's Special Corn and Tomato Guano	N. Woburn	16.91	866	12.72
" " " " " "	Westfield		1129	
" " " " " "	Greenfield		1171	
" " " " " "	Lee		1190	
J. W. Sanborn, Pittsfield, N. H.				
Chemical Fertilizer for Grass and Grain	E. Pepperell	25.91	952	6 34
Chemical Fertilizer for Hill and Drill	Sutton	19 39	1210	11 66
Chemical Fertilizer for Potatoes and Corn	E. Pepperell	25.81	953	11.71
Sanderson Fertilizer & Chem. Co., New Haven ,Ct.				
Sanderson's Atlantic Coast Bone, Fish and Potash	N. Amherst	17.50	57	17.47
Sanderson's Complete Tobacco Grower	N. Amherst	26.90	56	9.79
" " " "	Bradstreet		108	
" " " "	N. Hadley		146	
" " " "	N. Hadley		164	
" " " "	N. Hadley		179	
Sanderson's Corn Superphosphate	Three Rivers	17.40	1048	14.49
Sanderson's Formula A	Sunderland	24.26	112	9.79
" " "	Sunderland		725	
" " "	Three Rivers		1047	
Sanderson's Formula B	Sunderland	27.06	121	11.55
" " "	Sunderland		129	
Sanderson's Potato Manure	Three Rivers	19.64	1049	13 60
Sanderson's Special with 10% Potash	N. Amherst	24 18	60	12 29
Sanderson's Top Dressing for Grass and Grain	Sunderland	26.65	115	14.95
" " " " " " "	Sunderland		205	
M. L. Shoemaker & Co., Ltd., Philadelphia, Pa.				
"Swift-Sure" Superphosphate for General Use	Hatfield	26.03	52	11.15
" " " " " "	Sunderland		99	
" " " " " "	N. Hadley		181	
" " " " " "	N. Hadley		211	
" " " " " "	Hatfield		255	
" " " " " "	N. Hadley		445	
A. M. Smith & Co., 33 Comm. St., Boston, Mass.				
Equity Brand Dry Ground Hen Manure	Man'f. Sample	31.52	1229	9.30
Springfield Rendering Co., Springfield. Mass.				
Springfield Animal Fertilizer	Brightwood	20.78	1046	7.98
Springfield Special Potato and Vegetable	Brightwood	26.54	1051	6.08
Wm. Thomson & Sons, Ltd., Clovensford, Scotland.				
Thomson's Improved Vine, Plant and Veg. Manure	Boston	31.34	585	5.58
Thomson's Sp. Chrysanthemum Manure	Boston	31.25	495	6.66
20th Century Specialty Co., Boston, Mass.				
Scientific 12L No. 1	Man'f. Sample	19.20	1231	1.83
Virginia-Carolina Chem. Co., New York City.				
Indian Brand for Tobacco	Feeding Hills	24.51	619	7.94
" " " "	Feeding Hills		1146	
" " " "	Feeding Hills		1147	
" " " "	Feeding Hills		1148	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.65	.05	.20	.06	.96	.82	3.74	4.86	.89	9.49	8.50	8.60	8.00	4.17	4.00
1.33	.07	.49	.32	2.21	2.47	4.57	3.70	1.17	9.44	8.50	8.27	8.00	6.36	6.00
.98	.09	.38	.25	1.70	1.65	4.15	3.71	.48	8.34	7.50	7.86	7.00	4.96	5.00
4.26	.02	.29	.22	4.79	4.80	.45	4.83	1.25	6.53	6.00	5.28	4.50	5.91*	5.80
1.31	.16	.56	.37	2.40	2.30	4.21	3.24	2.04	9.49	10.00	7.45	7.00	4.52	4.00
1.25	.35	1.11	.46	3.17	3.30	4.63	3.08	2.19	9.90	9.50	7.71	7.00	8.35	8.00
.25	.21	.73	.54	1.73	1.67	5.42	2.59	.31	8.32	6.00	8.01	4.00	3.91*	4.00
.19	.30	2.30	1.57	4.36	4.50	1.12	3.29	.36	4.77	4.00	4.41	3.00	6.49*	5.50
.31	.63	.55	.35	1.84	1.67	5.42	3.54	.82	9.78	8.00	8.96	7.00	2.96	2.00
.91	1.25	.63	.55	3.34	3.33	1.85	5.42	1.38	8.65	8.00	7.27	6.00	6.53	6.00
1.66	.71	.57	.39	3.33	3.33	2.49	6.72	2.09	11.30	10.00	9.21	6.00	7.00*	6.00
.27	.78	.63	.62	2.30	1.67	1.98	4.68	1.63	8.29	7.00	6.66	5.00	5.83	6.00
.91	.65	.70	.45	2.71	2.47	3.10	4.14	.69	7.93	7.00	7.24	5.00	9.73	10.00
1.95	.91	.57	.39	3.82	4.00	4.50	3.11	.89	8.50	8.00	7.61	7.00	7.52	7.00
.81	.95	.72	.41	2.89	2.88	8.58	2.82	1.02	12.42	12.00	11.40	9.00	5.00*	4.50
.87	.89	3.26	2.31	7.33	7.00	—	—	—	2.55	2.00	—	—	1.42	1.00
.98	.64	.41	.36	2.39	2.46	4.46	4.96	.38	9.80	9.00	9.42	8.00	4.90	4.00
1.08	.80	.48	.38	2.74	3.28	3.74	5.39	.51	9.64	8.00	9.13	7.00	10.79	10.00
1.76	.73	1.41	.61	4.51	3.25	6.19	3.24	4.21	13.64	12.00	9.43	7.50	6.20	5.00
2.94	.73	.98	.47	5.12	4.25	5.33	4.25	3.21	12.79	12.00	9.58	6.30	4.46	3.00
2.90	—	.03	.03	2.96	1.00	2.01	1.08	—	3.09	2.00	3.09	1.90	7.25*	3.00
1.78	.29	.96	1.09	4.12	4.12	3.04	1.86	.99	5.89	5.00	4.90	3.00	5.05*	5.00

*No. 952 Chlorine 3.36% equivalent to 4.49% potash, 1.42% potash as sulfate.
" 57 Chlorine .30% equivalent to .39% potash, 3.52% potash as sulfate.
" 56–108+ " .99% " " 1.32% " 5.17% " " " Total potash 6.69%
" 121–129 " 1.45% " " 1.93% " 5.07% " " " " " 7.14%
" 52–99+ " .53% " " .71% " 4.29% " " "
" 1231 " 1.94% " " 2.59% " 4.66% " " "
" 619–1146+ " .64% " " .85% " 4.20% " " " Total potash 5.22%

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Virginia-Carolina Chem. Co., (Concluded)				
National Corn, Grain and Grass Top Dresser	Easthampton	$25.66	701	7.60
Owl Brand Potato and Truck Fertilizer	Easthampton	21.71	702	9.77
Tobacco and Onion Special	Easthampton	28.40	1203	7.13
XXX Fish and Potash	Southwick	15.92	1202	12.31
Whitman and Pratt Rendering Co., Lowell, Mass.				
W. & P. All Crop	N. Chelmsford	22.33	661	11.37
" " "	Billerica		733	
" " "	Woburn		764	
W. & P. Corn Success Fertilizer	Woburn	17.86	761	9.99
" " " "	Billerica		762	
W. & P. Potash Special	N. Chelmsford	26.84	678	9.98
W. & P. Potato Manure	N. Chelmsford	22.20	686	9.79
" " "	Billerica		812	
W. & P. Special Top Dresser	N. Chelmsford	35.14	684	6.83
W. & P. Special Top Dresser	N. Woburn	34.91	867	10.45
W. & P. Vegetable Grower	N. Chelmsford	26.14	682	9.74
Wilcox Fertilizer Co., Mystic, Ct.				
Wilcox Complete Bone Superphosphate	Marblehead	18.58	803	15.85
Wilcox Corn Special	New Bedford	22.04	298	13.54
Wilcox Fish and Potash	N. Hadley	18.32	232	15.42
" " " "	New Bedford		317	
" " " "	Fall River		318	
" " " "	Dighton		462	
Wilcox 4-8-10 Fertilizer	New Bedford	29.56	305	9.16
Wilcox Grass Fertilizer	Fall River	26.24	293	11.67
" " "	New Bedford		307	
" " "	Marblehead		801	
Wilcox H. G. Tobacco Special	Amherst	27.29	81	10.25
" " " "	Deerfield		398	
Wilcox Potato Fertilizer	Fall River	18.62	294	11.14
" " "	New Bedford		299	
Wilcox Potato, Onion and Vegetable Phosphate	Amherst	26.95	84	9.45
" " " " " "	Fall River		275	
" " " " " "	Sunderland		653	
" " " " " "	Marblehead		804	
Wilcox Special Superphosphate	Three Rivers	14.31	1052	15.66
A. H. Wood & Co., Framingham, Mass.				
Wood's B. B. Fertilizer	Framingham	22.45	1016	10.19
Wood's S. P. Fertilizer	Framingham	35.75	1007	6.40
Wood's 777 Fertilizer	Framingham	34.94	981	10.49
Worcester Rendering Co., Auburn, Mass.				
Royal Worcester Corn and Grain	Auburn	23.74	986	6.67
Royal Worcester Potato Fertilizer	Auburn	29.60	985	7.52

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.			
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
2.42	.02	.50	.45	3.39	3.29	6.22	2.35	1.38	9.95	9.00	8.57	8.00	7.33	7.00
1.08	.08	.16	.33	1.65	1.65	4.08	4.16	1.48	9.72	9.00	8.24	8.00	10.43	10.00
3.62	.13	.56	.48	4.79	3.29	5.27	2.33	.97	8.57	9.00	7.60	8.00	5.04*	5.00
.51	.68	.18	.43	1.80	1.65	1.95	6.19	1.71	9.85	9.00	8.14	8.00	2.27	2.00
1.24	.36	.69	.53	2.82	2.46	4.59	4.14	3.44	12.17	11.00	8.73	9.00	4.07	4.00
.50	.32	.61	.49	1.92	1.64	4.21	3.29	3.98	11.48	10.00	7.50	8.00	3.33	3.00
1.33	.70	.63	.45	3.11	2.87	4.62	1.86	1.10	7.58	8.00	6.48	6.00	11.78	10.00
1.16	.37	.70	.54	2.77	2.46	2.49	3.35	5.10	10.94	9.00	5.84	7.00	6.41	5.00
4.63	.31	.17	.15	5.26	5.75	2.93	4.06	2.58	9.57	8.00	6.99	4.00	13.10	12.00
4.71	.26	.12	.12	5.21	5.75	1.72	5.99	1.86	9.57	8.00	7.71	4.00	12.93	12.00
1.67	.43	.80	.55	3.45	3.29	4.12	3.33	3.09	10.54	10.00	7.45	8.00	7.60	7.00
1.35	.16	.30	.30	2.11	2.05	4.88	4.28	1.76	10.92	9.00	9.16	8.00	3.31	3.00
1.60	.16	.50	.44	2.70	2.46	6.31	2.32	.56	9.19	9.00	8.63	8.00	5.89	5.00
1.09	.23	.75	.63	2.70	2.46	2.01	3.37	1.94	7.32	6.00	5.38	5.00	3.94	3.00
2.53	.18	.57	.38	3.66	3.30	7.24	1.59	.28	9.11	9.00	8.83	8.00	10.39*	10.00
4.02	—	.22	.28	4.52	4.12	5.46	1.89	.66	8.01	7.00	7.35	6.00	5.42	5.00
1.47	.25	.99	.79	3.50	3.30	.42	7.56	.59	8.57	7.00	7.98	5.00	8.08*	7.00
1.20	.09	.47	.46	2.22	2.06	5.90	.99	.41	7.30	7.00	6.89	6.00	5.52	5.00
1.66	.81	.61	.40	3.48	3.30	7.27	1.61	.84	9.72	9.00	8.88	8.00	7.44*	7.00
.86	.02	.18	.24	1.30	1.23	4.97	4.09	.28	9.34	9.00	9.06	8.00	2.38	2.00
.70	.14	1.04	.51	2.39	2.50	6.10	3.49	1.48	11.07	11.00	9.59	8.00	5.85	5.00
2.24	.24	.98	.52	3.98	4.00	5.14	2.87	1.07	9.08	8.00	8.01	6.00	14.38*	12.00
5.33	.14	.88	.65	7.00	7.00	4.66	3.07	.89	8.62	9.00	7.73	7.00	4.79	7.00
.54	.87	.33	.39	2.13	2.25	5.61	5.08	8.60	19.29	9.00	10.69	8.00	4.01	3.00
.92	1.56	.64	.47	3.59	3.50	4.34	5.81	1.00	11.15	9.00	10.15	8.00	8.99	7.00

* No. 1203 Chlorine .53% equivalent to .71% potash, 4.33% potash as sulfate.
" 305 " 5.62% " " 7.46% " 2.93% " " "
" 81–398 " .87% " " 1.16% " 6.92% " " " Total potash 8.37%
" 84–275+ " 4.68% " " 6.22% " 1.22% " " "
" 1007 " .63% " " .84% " 13.54% " " "

Fertilizers Furnishing Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
PHOSPHATE AND POTASH				
American Agric. Chem. Co., Boston, Mass.				
A. A. C. Co. Grass and Oat Fertilizer...............	Southwick.....	$12.13	1133	12.08
“ “ “ “ “	S. Athol.......		1177	
Bowker Fertilizer Co., Boston, Mass.				
Bowker's Tobacco Ash Elements..................	Northampton..	21.20	465	5.41
Coe-Mortimer Co., New York City.				
E. Frank Coe's Famous Prize Brand Gr. & Gr. Fert.	S. Williamstown	11.30	1195	12.31
Lister's Agric. Chem. Works, Newark, N. J.				
Lister's Grain and Grass Fertilizer..................	Fall River.....	10.69	386	13.51
“ “ “ “ “	Hadley.......		426	
“ “ “ “ “	Williamst'wn..		1187	
Olds & Whipple, Hartford, Ct.				
O. & W. Potash and Bone Phosphate...............	N. Hadley.....	35.58	570	4.16
“ “ “ “ “ “	Bradstreet.....		695	
WOOD ASHES				
Bowker Fertilizer Co., Boston, Mass.				
Bowker's Pure Unleached Canada Hardwood Ashes	Fall River.....	9.09†	278	17.99
“ “ “ “ “ “ ...	Beverly.......		851	
Joseph Breck and Sons, Boston, Mass.				
Breck's High Grade Wood Ashes..................	Boston........	15.46†	485	.89
John Joynt, Lucknow, Ontario, Canada.				
Canada Unleached Hardwood Ashes................	Sunderland....	8.09†	339	24.62
Canada Unleached Hardwood Ashes................	Boston........	8.27†	497	6.94
Canada Unleached Hardwood Ashes................	N. Hadley.....	11.10†	556	14.40
Canada Unleached Hardwood Ashes................	Greenfield.....	8.67†	996	13.28
Canada Unleached Hardwood Ashes................	Worcester.....	9.95†	899	19.93
Canada Unleached Hardwood Ashes................	Fitchburg.....	10.47†	879	19.51
Canada Unleached Hardwood Ashes................	Sunderland....	12.09†	1207	9.90
Canada Unleached Hardwood Ashes................	Northfield.....	12.50†	1222	13.48
Canada Unleached Hardwood Ashes................	Amherst.......	12.56†	1246	12.89
Charles Stevens, Napance, Ontario.				
Beaver Brand Canada Wood Ashes.................	Taunton......	9.08†	360	17.61
GROUND ROCK				
New Mineral Fertilizer Co., 11 S. M'k't. St., Boston.				
New Mineral Fertilizer..........................	Boston........	.88	691**	.23

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†The potash in ashes is largely present as carbonate and has been valued at 8 cents per pound. The lime in ashes has been valued at the same price as for agricultural lime, namely, .004 cts. per pound of actual calcium oxide.

Fertilizers Furnishing Phosphoric Acid and Potash.

Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.		Acid Soluble Potash	Calcium Oxide (CaO) in 100 lbs.
			Total.		Available.					
Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.		
7.97	3.20	.87	12.04	12.00	11.17	11.00	2.56	2.00	—	—
.83	6.34	.84	8.01	9.00	7.17	6.00	15.28*	15.00	16.05	—
7.75	2.53	1.53	11.81	11.00	10.28	10.00	2.11	2.00	—	—
6.22	3.83	.33	10.38	11.00	10.05	10.00	2.38	2.00	—	—
.32	12.12	.26	12.70	—	12.44	12.00	17.27*	15.00	—	—
—	—	—	1.53	1.00	—	—	3.34	2.00	3.53	29.61
—	—	—	1.38	1.00	—	—	6.26	7.00	7.04	40.37
—	—	—	1.30	1.00	—	—	2.71	3.00	3.20	25.78
—	—	—	1.44	1.00	—	—	2.58	3.00	3.04	29.96
—	—	—	1.61	1.00	—	—	4.26	3.00	4.77	29.24
—	—	—	1.36	1.00	—	—	2.60	3.00	3.72	22.24
—	—	—	1.43	1.00	—	—	3.16	3.00	3.86	34.68
—	—	—	2.63	1.00	—	—	3.82	3.00	4.17	24.50
—	—	—	1.53	1.00	—	—	4.15	3.00	4.88	40.17
—	—	—	1.88	1.00	—	—	4.50	3.00	5.16	36.52
—	—	—	1.47	1.00	—	—	4.72	3.00	5.32	37.81
—	—	—	1.70	1.50	—	—	3.00	4.00	3.28	32.98
—	.22	.06	.28	.23	.22	—	.02	2.09*	—	—

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* No. 465 Chlorine .91% equivalent to 1.20% potash, 14.08% potash as sulfate.

* No. 570–695 Chlorine 1.08% equivalent to 1.43% potash, 1.65% potash as sulfate, 14.19% potash as carbonate.

** Total Nitrogen .20%.

* No. 691 Total potash guarantee, no guarantee of water soluble potash.

Fertilizers for Private Use, Officially Collected (Not Registered).

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
American Agric. Chem. Co., Boston, Mass.				
Special Top Dressing	Milford	$31.91	1019	9.42
W. S. Barnes, Southwick, Mass.				
Potato Home Mixture	Southwick	33.29	1045	5.23
Home Mixture for Grass	Southwick	39.85	1044	3.92
Home Mixture for Tobacco	Southwick	24.44	1043	4.99
Berkshire Fertilizer Co., Bridgeport, Ct.				
Special Mixture	N. Hadley	34.45	195	9.87
Special Mixture	Hadley	33.72	1197	7.26
Special Mixture	N. Hadley	34.01	521	11.49
Special Mixture	N. Hadley	28.72	520	10.57
Special Mixture	Seekonk	30.38	452	8.99
Special Mixture	Seekonk	30.93	455	9.59
Joseph Breck & Sons, Boston, Mass.				
Lowland Fertilizer, Special Mixture	Boston	27.65	496	9.24
R. W. Carter, West Springfield, Mass.				
Carter's Mixture	W. Springfield	29.48	754	6.68
Carter's Mixture	W. Springfield	34.28	755	7.39
Carter's Mixture	W. Springfield	31.15	756	7.79
Carter's Mixture	W. Springfield	32.30	757	6.14
Carter's Mixture	W. Springfield	33.55	758	6.59
Fish and Potash	W. Springfield	35.08	751	6.46
Essex Fertilizer Co., 39 N. Market St., Boston, Mass.				
Essex New Tobacco Fertilizer	Deerfield	26.95	937	5.83
Essex Tobacco Starter and Grower	Southwick	24.85	1127	5.93
Essex Co's. Special Mixture	Easthampton	32.01	699	5.66
Fottler, Fiske, Rawson Co., Boston, Mass.				
Scotch Soot	Boston	7.49	689	8.41
A. W. Higgins, Westfield, Mass.				
Higgins' Special Mixture	Sunderland	28.81	651	8.65
Tobacco Mixture	Sunderland	30.11	98	6.42
Onion Mixture	Sunderland	30.61	102	7.06
Special Onion	Sunderland	29.09	726	8.02
International Agric. Corp., Buffalo, N. Y.				
Extra Phosphate and Potash	Hadley	18.11	794	13.89
Mitchell Fert. Co., Tremley, N. J.				
Mitchell's Special Fertilizer	Seekonk	28.35	458	10.87
Mitchell's Special Fertilizer	Seekonk	29.11	1244	10.65
Olds and Whipple, Hartford, Ct.				
O. & W. Special Home Mixture	N. Hadley	30.59	163	9.37
O. & W. Special Home Mixture	N. Hadley	28.25	568	8.96

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* No. 756	Chlorine	.53%	equivalent to	.71%	potash,	8.46%	potash as sulfate.		
" 757	"	.71%	" "	.94%	"	9.56%	" " "		
" 758	"	.73%	" "	.97%	"	9.98%	" " "		
" 751	"	.49%	" "	.66%	"	12.17%	" " "		
" 937	"	.71%	" "	.94%	"	5.75%	" " "		
" 1127	"	.77%	" "	1.02%	"	5.45%	" " "	Total potash 6.69%	
" 699	"	1.09%	" "	1.40%	"	5.85%	" " "		
" 651	"	1.95%	" "	2.60%	"	4.78%	" " "	Total potash 9.71%	
" 98	"	.35%	" "	.46%	"	8.57%	" " "		
" 102	"	.70%	" "	.93%	"	7.98%	" " "		
" 726	"	.64%	" "	.85%	"	8.94%	" " "		
" 163	"	.50%	" "	.67%	"	1.33%	" " "	3.27% potash as carb.	
" 568	"	.49%	" "	.66%	"	2.32%	" " "	2.52 % potash as carb.	

Fertilizers for Private Use, Officially Collected (Not Registered).

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total					Total.		Available.			
As Nitrates and Ammoniates	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
3.40	.77	.86	.35	5.38	—	2.46	4.43	.99	7.88	—	6.89	—	8.53	—
.77	.52	1.53	.74	3.56	3.50	—	8.62	7.12	15.74	12.00	8.62	—	10.27*	10.00
4.53	.91	.40	.21	6.05	6.40	—	5.03	1.86	6.89	6.60	5.03	—	17.76	15.00
.61	1.38	1.43	1.23	4.65	4.14	—	2.02	.94	2.96	2.90	2.02	—	4.69*	5.00
.13	.59	2.30	.90	3.92	3.42	1.51	10.15	2.40	14.06	11.00	11.66	—	8.86*	8.25
.98	.16	2.21	1.71	5.06	4.65	.26	7.07	.20	7.53	7.00	7.33	6.00	8.88*	8.50
.18	—	2.99	2.00	5.17	5.00	1.02	5.74	1.02	7.78	7.00	6.76	—	8.16*	6.00
.27	.35	3.10	2.22	5.94	5.98	.26	1.50	.54	2.30	2.90	1.76	—	4.15*	2.26
1.58	.18	1.15	.55	3.46	3.30	.83	10.04	2.04	12.91	11.40	10.87	—	8.35*	8.18
1.62	.10	1.24	.66	3.62	3.30	1.34	9.43	1.99	12.76	10.40	10.77	—	8.33*	8.18
1.29	—	1.77	1.18	4.24	—	2.52	1.05	.36	3.93	—	3.57	—	10.79	—
1.86	.06	1.51	1.02	4.45	4.37	3.57	2.07	1.07	6.71	5.90	5.64	5.00	8.06*	8.00
4.40	.19	.07	.07	4.73	4.57	8.33	.75	.46	9.54	9.00	9.08	8.00	10.39*	10.00
.34	.51	1.11	.95	2.91	2.80	.13	8.44	10.28	18.85	16.50	8.57	—	9.17*	7.50
4.29	.02	.04	.03	4.38	4.30	6.35	1.72	.94	9.01	7.70	8.07	7.70	10.50*	10.00
4.26	.34	.04	.03	4.67	4.50	6.29	1.13	1.43	8.85	7.70	7.42	7.70	10.95*	10.00
.29	.20	2.53	1.05	4.07	—	3.70	2.86	2.65	9.21	—	6.56	—	12.83*	—
1.19	.71	1.37	1.07	4.34	4.10	2.68	1.86	.82	5.36	5.00	4.54	—	6.69*	6.00
2.22	.91	.52	.19	3.84	4.00	1.51	3.60	1.73	6.84	5.00	5.11	—	6.47*	6.00
1.03	.70	1.82	1.76	5.31	5.39	.87	4.46	1.43	6.76	2.65	5.33	—	7.29*	7.10
1.14	.14	.32	.93	2.53	—	—	—	—	.10	—	—	—	—	—
1.10	2.15	.58	.33	4.16	4.00	.04	6.87	2.12	9.03	9.00	6.91	—	7.38*	7.00
.81	.89	1.54	.99	4.23	4.52	—	6.22	.46	6.68	—	6.22	6.00	9.03*	8.00
1.23	1.94	.55	.32	4.04	4.00	.06	7.27	2.50	9.83	—	7.33	9.00	8.91*	7.00
1.10	1.41	.36	.26	3.13	—	.67	8.47	1.35	10.49	—	9.14	—	9.79*	—
.09	.30	.06	.05	.50	—	8.01	2.99	.97	11.97	11.00	11.00	—	7.77	8.00
2.43	.21	.88	.44	3.96	4.11	5.17	3.14	1.79	10.10	9.00	8.31	8.00	8.10	8.00
2.14	.20	1.31	.46	4.11	4.11	6.86	1.76	.51	9.13	9.00	8.62	8.00	8.24	8.00
.85	1.35	1.80	1.25	5.25	4.81	.16	3.99	.47	4.62	2.72	4.15	2.72	5.27*	5.00
.83	1.14	1.38	1.16	4.51	4.09	.64	4.44	.38	5.46	4.00	5.08	4.00	5.50*	5.00

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* No.	1045	Chlorine	.56%	equivalent to	.75%	potash,	9.52%	potash as sulfate.		
"	1043	"	.08%	" "	.12%	"	4.57%	"	"	"
"	195	"	.22%	" "	.29%	"	8.57%	"	"	"
"	1197	"	1.00%	" "	1.33%	"	7.55%	"	"	"
"	521	"	.44%	" "	.58%	"	7.58%	"	"	"
"	520	"	.32%	" "	.42%	"	3.73%	"	"	"
"	452	"	.40%	" "	.53%	"	7.82%	"	"	"
"	455	"	.37%	" "	.48%	"	7.85%	"	"	"
"	754	"	.45%	" "	.60%	"	7.46%	"	"	"
"	755	"	.74%	" "	.99%	"	9.40%	"	"	"

Fertilizers for Private Use, Officially Collected (Not Registered).

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Parmenter and Polsey Fert. Co., Boston, Mass.				
P. & P. Special Top Dressing	Auburn	$37.31	989	8.64
Sanderson Fert. & Chem. Co., New Haven, Ct.				
Prof. Brooks' Corn Formula	Florence	31.36	938	17.53
John Smith, S. Westport, Mass.				
Special Oat Fertilizer, Home Mixed	S. Westport	26.42	395	8.08
State Farm, Mass., (E. E. Bacon)				
Grass Fertilizer	State Farm	21.72	529	5.96
Onion Special	State Farm	28.82	530	2.39
NITROGEN COMPOUNDS				
Armour Fertilizer Works, Baltimore, Md.				
Hoof Meal	Amherst	66.29	998	8.38
Berkshire Fertilizer Co., Bridgeport, Ct.				
High Grade Tankage	N. Hadley	38.48	561	7.88
E. D. Chittenden Co., Bridgeport, Ct.				
Nitrate of Soda	N. Amherst	51.22	96	1.53
Rodney J. Hardy & Sons, Boston, Mass.				
Good Luck Brand Cottonseed Meal	Southwick	30.60	40	7.55
A. W. Higgins, Westfield, Mass.				
Sulfate of Ammonia	Amherst	71.77	1002	.17
Lowell Fertilizer Co., Boston, Mass.				
Dried Blood	Dudley	49.69	1117	10.28
Lowell's Bone and Meat Meal	Hatfield	41.64	238	7.22
Mitchell Fertilizer Co., Tremley, N. J.				
Nitrate of Soda	Seekonk	50.62	459	2.84
Mortimer & Co., New York City.				
Nitrate of Potash	Amherst	90.05	267	1.03
National Fertilizer Co., Boston, Mass.				
Castor Pomace	Hatfield	20.66	254	12.01
New England Fert. Co., Boston, Mass.				
Dry Ground Fish	Sunderland	41.84	648	10.17
Geo. B. Robinson, Jr., 18 Broadway, New York City.				
Good Luck Brand Cottonseed Meal	N. Hadley	29.88	176	8.94
Dark Cottonseed Meal	Westfield	30.11	785	11.75
Ross Bros. Co., Worcester, Mass.				
Tankage	Amherst	38.76	1000	4.36
C. M. Shay Fertilizer Co., Groton, Ct.				
Nitrate of Soda	Attleboro	50.23	714	2.36
Tankage	Attleboro	25.35	713	9.61
POTASH COMPOUNDS				
E. D. Chittenden Co., Bridgeport, Ct.				
Muriate of Potash	N. Amherst	42.56	109	.72
C. M. Shay Fertilizer Co., Groton, Ct.				
Muriate of Potash	Attleboro	39.87	718	2.46
PHOSPHORIC ACID COMPOUNDS				
E. D. Chittenden Co., Bridgeport, Ct.				
16% Acid Phosphate	N. Amherst	14.08	103	12.11
J. W. Sanborn, Pittsfield, N. H.				
Basic Slag Phosphate	Sutton	13.57	1213	.11
C. M. Shay Fertilizer Co., Groton, Ct.				
Acid Phosphate	Attleboro	15.52	717	11.99
State Farm, Mass. (E. E. Bacon)				
Ground Bone	State Farm	30.56	538	3.81

Fertilizers for Private Use, Officially Collected (Not Registered).

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
2.58	1.44	1.48	.75	6.25	6.50	.57	6.19	1.38	8.14	7.00	6.76	5.00	10.60	10.00
1.69	.99	1.24	.76	4.68	3.50	1.95	4.05	1.28	7.28	—	6.00	4.50	10.76	10.00
1.50	.90	.53	.38	3.31	—	2.17	6.05	3.90	12.12	—	8.22	—	7.58	—
3.64	.17	.05	.04	3.90	—	1.47	.50	.13	2.10	—	1.97	—	7.04*	—
2.16	.70	.28	.40	3.54	—	.13	5.56	3.16	8.85	—	5.69	—	10.64*	—
.52	.68	9.54	3.90	14.64	—	—	—	—	.51	—	—	—	—	—
.14	2.04	3.40	2.25	7.83	7.50	—	—	—	8.14†	6.00	—	—	—	—
15.52	—	—	—	15.52	14.83	—	—	—	—	—	—	—	—	—
—	—	—	—	6.80	6.50	—	—	—	—	—	—	—	—	—
20.84	—	—	—	20.84	—	—	—	—	—	—	—	—	—	—
.31	4.30	3.75	1.61	9.97	9.84	—	—	—	6.88	—	—	—	—	—
.31	4.19	2.12	1.49	8.11	—	—	8.09	1.53	9.62†	—	8.09	—	—	—
15.34	—	—	—	15.34	15.00	—	—	—	—	—	—	—	—	—
13.30	—	—	—	13.30	—	—	—	—	—	—	—	—	46.16	—
—	—	—	—	4.59	—	—	—	—	—	—	—	—	—	—
.31	.62	4.64	1.99	7.46	7.50	—	9.51	1.66	11.17	11.00	9.51	—	—	—
—	—	—	—	6.64	6.50	—	—	—	—	—	—	—	—	—
—	—	—	—	5.69	—	—	—	—	—	—	—	—	—	—
.17	3.43	1.72	1.39	6.71	—	—	—	—	12.99†	—	—	—	—	—
15.22	—	—	—	15.22	15.00	—	—	—	—	—	—	—	—	—
.30	2.04	1.62	1.54	5.50	6.58	—	4.16	1.17	5.33†	10.00	4.16	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	53.20	48.00
—	—	—	—	—	—	—	—	—	—	—	—	—	49.84	50.00
—	—	—	—	—	—	10.75	4.60	1.79	17.14	—	15.35	16.00	—	—
—	—	—	—	—	—	—	15.26	3.41	18.67	—	15.26	—	—	—
—	—	—	—	—	—	15.19	2.10	.43	17.72	—	17.29	16.00	—	—
.02	.70	.34	.30	1.36	—	—	—	—	31.30†	—	—	—	—	—

* No. 529 Chlorine .41% equivalent to .55% potash, 6.49% potash as sulfate.
" 530 " .58% " " .78% " 9.86% " " "
† " 561 Mechanical Analysis, Fine 76.04% Coarse 23.96%
" 238 " " " 87.61% " 12.39%
" 1000 " " " 92.77% " 7.23%
" 713 " " " 48.03% " 51.97%
" 538 " " " 92.00% " 8.00%

Ground Bone.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.
American Agric. Chem. Co., Boston, Mass.				
Fine Ground Bone	Whitman	$26.22	668	6.65
“ “ “	E. Pepperell		958	
Farquhar's Pure Ground Bone	Boston	26.01	616	8.05
Flour of Bone	Boston	31.06	584	5.12
Armour Fertilizer Works, Baltimore, Md.				
Bone Meal	Middleboro	31.46	1208	4.84
Beach Soap Co., Lawrence, Mass.				
Fertilizer Bone	Lawrence	33.25	589	6.58
Bowker Fertilizer Co., Boston, Mass.				
Bowker's Fresh Ground Bone	Northampton	27.79	1064	5.94
E. D. Chittenden Co., Bridgeport, Ct.				
Pure Ground Bone	Leominster	29.70	918	6.08
Coe-Mortimer Co., New York City.				
Fine Ground Bone	Westfield	24.58	1121	10.64
XXX Fine Ground Bone	Norfolk	29.80	1249	5.11
John C. Dow Co., 13 Chatham St., Boston, Mass.				
Dow's Ground Bone	Boston	28.35	505	7.55
“ “ “	Boston		670	
“ “ “	Fitchburg		880	
Essex Fertilizer Co., Boston, Mass.				
Essex Ground Bone	Deerfield	31.43	934	6.63
Thomas Hersom & Co., New Bedford, Mass.				
Pure Bone Meal	New Bedford	31.17	302	4.82
International Agric. Corp., Buffalo, N. Y.				
Bone Flour	Hatfield	30.87	243	6.49
Bone Meal	Hadley	28.13	795	7.40
“ “	Lee		1181	
Lister's Agric. Chem. Works, Newark N. J.				
Lister's Pure Ground Bone	Natick	29.61	1099	5.12
Lowell Fertilizer Co., Boston, Mass.				
Lowell Ground Bone	Hatfield	31.81	240	4.47
“ “ “	Fall River		280	
“ “ “	Taunton		368	
“ “ “	Fall River		391	
“ “ “	Concord		606	
Geo. E. Marsh & Co., Lynn, Mass.				
Marsh's Pure Bone Meal	Man'f. Sample	34.50	1215	4.73
National Fertilizer Co., Boston, Mass.				
Chittenden's Fine Ground Bone	Hatfield	27.73	1055	6.54
Nitrate Agencies Co., New York City.				
Ground Bone	Sunderland	28.45	120	6.36
“ “	Feeding Hills		477	
“ “	Seekonk		720	
“ “	Worcester		905	
“ “	Framingham		982	
“ “	Southwick		1144	
Ground Bone	Amherst	28.77	999	4.96
Ground Bone	Seekonk	30.80	1245	8.25
Carroll S. Page, Hyde Park, Vt.				
Pure Ground Bone	Westford	32.03	1122	7.51
Parmenter & Polsey Fert. Co. Boston, Mass.				
P. & P. Ground Bone	Hadley	34.52	563	5.32

Ground Bone.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Mechanical Analysis.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Fine Bone.	Coarse Bone.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
.26	.51	.78	.64	2.19	2.47	—	—	—	22.14	22.88	—	—	76.99	23.01
.23	.70	1.04	.42	2.39	2.47	—	—	—	20.56	22.88	—	—	81.79	18.21
.08	1.07	.72	.70	2.57	2.47	—	—	—	25.08	22.88	—	—	98.84	1.16
.29	.52	1.34	.85	3.00	2.47	—	—	—	25.33	22.00	—	—	65.35	34.65
.20	1.49	1.69	.85	4.23	2.67	—	—	—	21.07	20.00	—	—	67.32	32.68
.17	.54	1.17	.59	2.47	2.47	—	—	—	22.62	22.88	—	—	78.27	21.73
.06	.48	1.52	.64	2.70	2.47	—	—	—	23.50	22.88	—	—	84.12	15.88
.26	1.05	.76	.59	2.66	2.47	—	—	—	17.45	22.88	—	—	78.83	21.17
.16	.65	1.16	.58	2.55	2.47	—	—	—	24.57	22.88	—	—	81.64	18.36
.20	.49	1.02	.72	2.43	2.00	—	—	—	22.96	24.00	—	—	88.96	11.04
.07	.76	1.04	.76	2.63	2.46	—	—	—	26.43	23.00	—	—	78.18	21.82
.17	1.17	.55	.50	2.39	2.00	—	—	—	26.71	24.00	—	—	89.54	10.46
.21	.40	1.28	.85	2.74	2.40	—	—	—	24.08	22.00	—	—	96.05	3.95
.23	1.03	.80	.75	2.81	2.40	—	—	—	20.92	22.00	—	—	84.11	15.89
.16	.60	1.01	.73	2.50	2.67	—	—	—	24.34	23.00	—	—	85.86	14.14
.08	1.07	.89	.57	2.61	2.46	—	—	—	26.61	23.00	—	—	85.04	14.96
.05	1.65	.76	.64	3.10	2.46	—	—	—	26.75	28.00	—	—	95.46	4.54
.16	.35	1.44	.51	2.46	2.47	—	—	—	22.35	22.88	—	—	82.71	17.29
.18	.19	1.56	.66	2.59	2.46	—	—	—	22.32	22.88	—	—	87.49	12.51
.06	.41	1.40	.71	2.58	2.46	—	—	—	23.42	22.88	—	—	75.78	24.22
.15	1.04	1.36	.36	2.91	2.46	—	—	—	23.90	22.88	—	—	82.10	17.90
.13	.45	1.83	.72	3.13	3.29	—	—	—	25.69	20.00	—	—	61.04	38.96
.15	1.57	1.19	.60	3.51	2.46	—	—	—	24.52	23.00	—	—	96.31	3.69

Bone and Tankage.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.
BONE (Concluded)				
Rogers Manufacturing Co., Rock Fall, Ct.				
Fine Ground Bone	Deerfield	$35.53	415	12.70
“ “ “	N. Hadley		519	
“ “ “	Norwood		829	
“ “ “	Fitchburg		878	
Pure Raw Knuckle Bone Flour	Amherst	37.28	269	10.58
Pure Raw Knuckle Bone Flour	Brookfield	37.20	963	10.01
Rogers & Hubbard Co., Middletown, Ct.				
Pure Raw Knuckle Bone Flour	E. Milton	37.45	825	10.05
Strictly Pure Fine Bone	E. Milton	30.94	827	11.24
Sanderson Fert. & Chem. Co., New Haven, Ct.				
Sanderson's Fine Ground Bone	Three Rivers	31.30	1041	6.08
M. L. Shoemaker & Co., Ltd., Philadelphia, Pa.				
"Swift-Sure "Bone Meal	Sunderland	40.83	97	2.87
Springfield Rendering Co., Springfield, Mass.				
Springfield Ground Bone	Brightwood	31.57	1050	4.38
T. L. Stetson, Randolph, Mass.				
Ground Bone	Man'f. Sample.	33.18	68	7.74
Whitman & Pratt Rendering Co., Lowell, Mass.				
W. & P. Pure Ground Bone	N. Chelmsford.	30.28	662	8.21
Wilcox Fertilizer Co., Mystic, Ct.				
Wilcox Pure Ground Bone	Fall River	28.55	274	9.25
“ “ “	New Bedford		308	
S. Winter Co., Brockton, Mass.				
Pure Ground Bone	Brockton	30.82	843	8.08
DISSOLVED BONE				
W. H. Abbott, Holyoke, Mass.				
Abbott's Animal Fertilizer	Bradstreet	27.64	75	9.57
Abbott's Animal Fertilizer	Deerfield	26.99	421	10.15
Mapes' Formula and Peruvian Guano Co., N. Y. City.				
Mapes' Dissolved Bone	Amherst	26.96	264	10.01
Mapes' Dissolved Bone	Conway	25.19	1164	12.62
TANKAGE				
American Agric. Chem. Co., Boston, Mass.				
Ground Tankage	Deerfield	40.08	419	10.93
“ “	Boston		482	
Ground Tankage	Boston	34.06	483	9.48
“ “	Fitchburg		883	
Bowker Fertilizer Co., Boston, Mass.				
Bowker's Fine Ground Bone Tankage	Ayer	35.89	949	8.03
“ “ “ “ “	Charlton		972	
“ “ “ “ “	Northampton		1062	
Coe-Mortimer Co., New York City.				
Ground Tankage 6–30	Medway	38.77	66	7.74
Ground Tankage 9–20	Van Deusenville	39.30	1223	8.48
Thomas Hersom & Co., New Bedford, Mass.				
Meat and Bone	New Bedford	35.78	303	6.34
Lowell Fertilizer Co., Boston, Mass.				
Tankage	S. Westport	35.96	382	7.81
“	Concord		526	
Nitrate Agencies Co., New York City.				
Ground Tankage	State Farm	29.04	541	6.74
Ground Tankage	Seekonk	33.82	719	5.32
Ground Tankage	Framingham	42.17	1006	5.57
Ground Tankage	Southwick	40.03	1132	5.71
Ground Tankage	Seekonk	30.68	1243	9.06

Bone and Tankage.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Mechanical Analysis.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Fine Bone.	Coarse Bone.
.24	.02	2.37	.88	3.51	3.50	—	—	—	25.74	25.00	—	—	97.15	2.85
.11	.02	2.87	.84	3.84	3.80	—	—	—	26.33	25.00	—	—	94.74	5.26
.10	.03	2.35	1.26	3.74	3.80	—	—	—	26.83	25.00	—	—	93.85	6.15
.19	—	2.74	1.05	3.98	2.83	—	—	—	25.69	24.50	—	—	96.14	3.86
.66	.63	1.59	.75	3.63	3.70	—	—	—	20.79	22.00	—	—	73.82	26.18
.22	.70	.81	.47	2.20	2.47	—	—	—	28.51	20.00	—	—	79.07	20.93
.05	1.84	2.27	1.04	5.20	4.53	—	—	—	23.75	20.00	—	—	92.00	8.00
.08	.48	1.08	.83	2.47	2.46	—	—	—	26.51	23.00	—	—	94.17	5.83
.19	.20	2.47	1.39	4.25	4.20	—	—	—	21.07	20.66	—	—	64.50	35.50
.31	1.48	.64	.48	2.91	2.40	—	—	—	24.31	22.00	—	—	64.71	35.29
.18	.38	1.48	.63	2.67	2.46	—	—	—	22.60	22.00	—	—	76.77	23.23
.31	1.13	.43	.41	2.28	3.25	—	—	—	27.71	24.15	—	—	74.81	25.19
.61	.71	1.64	.96	3.92	3.00	1.02	11.23	7.04	19.29	15.00	12.25	10.00	—	—
.49	.79	1.49	1.03	3.80	3.00	1.34	10.78	6.58	18.70	15.00	12.12	10.00	—	—
.35	.91	1.29	.58	3.13	2.06	3.93	13.16	2.22	19.31	12.00	17.09	12.00	—	—
.32	.97	.60	.60	2.49	2.06	3.73	14.54	1.71	19.98	12.00	18.27	12.00	—	—
.37	2.35	3.71	1.40	7.83	7.41	—	—	—	10.00	9.15	—	—	77.95	22.05
.47	1.78	1.98	1.10	5.33	4.94	—	—	—	16.30	13.73	—	—	67.60	32.40
.15	1.85	1.87	1.24	5.11	4.94	—	—	—	18.73	13.73	—	—	81.98	18.02
.39	2.36	2.99	1.06	6.80	4.94	—	—	—	15.56	13.73	—	—	58.21	41.79
.33	.30	4.68	1.80	7.11	7.41	—	—	—	12.07	9.15	—	—	86.51	13.49
.11	.34	2.84	1.86	5.15	4.00	—	—	—	17.86	16.00	—	—	88.95	11.05
.24	2.46	1.42	1.41	5.53	4.90	—	—	—	17.81	13.00	—	—	66.70	33.30
.33	2.75	1.49	1.25	5.82	5.75	—	—	—	6.28	6.86	—	—	80.70	19.30
.13	.26	3.21	1.61	5.21	5.75	—	—	—	16.02	13.73	—	—	75.74	24.26
.20	1.20	4.78	2.81	8.99	8.37	—	—	—	7.58	6.30	—	—	67.86	32.14
.11	1.01	3.09	2.49	6.70	7.40	—	—	—	14.90	11.44	—	—	89.71	10.29
.30	3.06	1.42	1.34	6.12	5.75	—	—	—	6.81	6.86	—	—	80.59	19.41

Tankage and Dry Ground Fish.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.
TANKAGE (Concluded)				
Springfield Rendering Co., Springfield, Mass.				
Brightwood Tankage	Sunderland	$39.66	135	6.45
“ “	Sunderland		202	
“ “	N. Hadley		436	
Whitman & Pratt Rendering Co., Lowell ,Mass.				
Ground Tankage	N. Chelmsford	33.35	673	7.04
Ground Tankage	N. Chelmsford	37.33	674	10.30
J. M. Woodard, Greenfield, Mass.				
Woodard's Unground Tankage	Conway	30.67	1166	9.75
Worcester Rendering Co., Auburn, Mass.				
Ground Tankage	Auburn	40.05	987	7.05
DRY GROUND FISH				
American Agric. Chem. Co., Boston, Mass.				
Dry Ground Fish	Bradstreet	41.01	333	10.39
Dry Ground Fish	Hadley	40.31	430	8.64
“ “ “	Sunderland		724	
“ “ “	Hatfield		1054	
Dry Ground Fish	N. Hadley	41.71	153	9.11
“ “ “	Sunderland		199	
“ “ “	N. Amherst		727	
Berkshire Fertilizer Co., Bridgeport, Ct.				
Berkshire Dry Ground Fish	Sunderland	42.48	130	8.97
Berkshire Dry Ground Fish	N. Hadley	41.07	145	9.30
“ “ “ “	N. Hadley		161	
“ “ “ “	N. Hadley		168	
“ “ “ “	N. Hadley		207	
“ “ “ “	N. Hadley		518	
“ “ “ “	N. Hadley		545	
“ “ “ “	Hadley		820	
Bowker Fertilizer Co., Boston, Mass.				
Bowker's Dry Ground Fish	Dighton	42.50	379	11.82
“ “ “ “	Deerfield		404	
“ “ “ “	Northampton		464	
Essex Fertilizer Co., Boston, Mass.				
Essex Dry Ground Fish	Deerfield	42.85	936	11.71
A. W. Higgins, Westfield, Mass.				
Dry Ground Fish	Sunderland	48.80	119	14.95
“ “ “	Sunderland		125	
“ “ “	Sunderland		180	
“ “ “	Southwick		1131	
International Agric. Corp., Buffalo, N. Y.				
Dry Ground Fish	N. Amherst	37.55	62	12.91
Dry Ground Fish	Hockanum	33.13	226	16.15
“ “ “	Worcester		1093	
Olds and Whipple, Hartford, Ct.				
O. & W. Dry Ground Fish	Hatfield	43.91	45	8.74
“ “ “ “	Hadley		224	
“ “ “ “	N. Hadley		229	
“ “ “ “	N. Hadley		558	
“ “ “ “	Bradstreet		693	
Sanderson Fertilizer and Chem. Co., New Haven, Ct.				
Sanderson's Fine Ground Fish	Bradstreet	42.69	77	12.46
“ “ “ “	Feeding Hills		474	
“ “ “ “	S. Deerfield		624	
Sanderson's Fine Ground Fish	Feeding Hills	44.29	997	12.43
Wilcox Fertilizer Co., Mystic, Ct.				
Wilcox Dry Ground Acidulated Fish	Fall River	40.83	292	14.01
Wilcox Dry Ground Fish Guano	Amherst	43.25	94	9.33
“ “ “ “ “	Deerfield		417	
Wilcox Dry Ground Fish Guano	Amherst	44.37	266	8.01

Tankage and Dry Ground Fish.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Mechanical Analysis.	
				Total					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Fine Bone.	Coarse Bone.
.24	3.22	2.61	1.40	7.47	7.00	—	—	—	10.59	10.00	—	—	86.74	13.26
.16	1.19	2.23	1.46	5.04	5.34	—	—	—	17.37	13.73	—	—	61.45	38.55
.26	3.10	2.86	1.21	7.43	7.40	—	—	—	9.21	9.15	—	—	71.02	28.98
.44	1.09	1.83	1.58	4.94	4.50	—	—	—	17.99	18.00	—	—	13.77	86.23
.09	4.23	1.92	1.10	7.34	7.00	—	—	—	12.73	12.00	—	—	76.28	23.72
.51	.56	4.72	1.96	7.75	8.23	—	5.89	3.55	9.44	6.00	5.89	—	—	—
.31	.45	4.86	1.98	7.60	8.23	—	6.58	3.04	9.62	6.00	6.58	—	—	—
.51	.33	5.09	2.10	8.03	8.23	—	6.40	2.68	9.08	6.00	6.40	—	—	—
.28	.45	5.42	2.08	8.23	8.23	—	5.40	2.81	8.21	6.00	5.40	—	—	—
.31	.35	5.19	2.18	8.03	8.23	—	4.62	3.11	7.73	6.00	4.62	—	—	—
.49	.74	5.25	1.78	8.26	8.23	—	5.69	1.94	7.63	6.00	5.69	—	—	—
.44	.70	4.28	2.16	7.58	7.50	.64	10.00	.41	11.05	11.00	10.64	—	—	—
.65	3.32	3.88	1.65	9.50	9.00	—	6.91	1.30	8.21	8.50	6.91	—	—	—
1.18	.78	3.01	1.87	6.84	6.50	—	7.12	2.68	9.80	6.00	7.12	—	—	—
.93	.69	2.56	1.71	5.89	6.50	—	7.76	1.02	8.78	6.00	7.76	—	—	—
.54	.69	4.52	2.59	8.34	7.40	.57	5.91	2.86	9.34	5.50	6.48	4.50	—	—
.72	1.76	3.39	2.43	8.30	8.23	—	5.95	1.45	7.40	6.00	5.95	—	—	—
.79	2.28	3.58	1.92	8.57	8.23	—	6.31	1.68	7.99	6.00	6.31	—	—	—
.81	1.03	4.25	1.95	8.04	7.80	1.63	3.70	.54	5.87	6.00	5.33	4.00	—	—
.44	.06	4.67	3.50	8.67	8.24	.48	4.01	1.48	5.97	6.00	4.49	4.00	—	—
.25	.18	5.57	2.95	8.95	8.24	—	3.70	2.83	6.53	6.00	3.70	4.00	—	—

Lime Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Chemical Analyses of Lime Products.						
		Moisture.	Calcium Oxide (CaO).		Magnesium Oxide (MgO).		Carbonic Acid (CO_2).	Insoluble Matter.
			Found.	Guaranteed.	Found.	Guaranteed.		
HYDRATED OR SLAKED LIME								
Cheshire Lime Mfg. Co., Cheshire, Mass.								
Cheshire Agricultural Lime	Cheshire	.08	69.39	58-70	2.14	.60-2.55	17.46	1.39
J. A. Creighton, Thomaston, Me.								
Wood Burned Lime	Man'f. Sample	4.82	65.03	60-65	4.64	.50-5.00	1.04	2.28
Herbert Harris, Saylesville, R. I.								
Slaked Lime	Man'f. Sample	.27	65.74	45.00	10.52	15.00	1.50	5.28
Slaked Lime	N. Attleboro	1.03	50.92	45.00	14.64	15.00	8.77	4.99
Farnam Cheshire Lime Co., Farnams, Mass.								
Agricultural Lime " "	W. Springfield Pittsfield	—	77.79	60-75	.93	0-1.50	10.23	.71
Green Mountain Lime Co., Middleboro, Vt.								
Green Mountain Agricultural Lime	Man'f. Sample	—	71.26	55-95	1.05	trace	2.78	6.42
Hoosac Valley Lime & Marble Co., Adams, Mass.								
Adams Agricultural Lime	Springfield	.73	62.36	52-72	1.33	.44-1.14	3.10	7.89
Adams Agricultural Lime	Springfield	13.55	51.71	52-72	.99	.44-1.14	13.14	5.25
Adams Agricultural Lime	Holyoke	2.26	62.12	52-72	.78	.44-1.14	9.84	3.17
New England Lime Co., Danbury, Ct.								
Adams, Mass. Fresh Burned Granulated Lime	Man'f. Sample	—	81.38	80-100	1.19	0-3.00	4.75	1.67
Adams, Mass. Agricultural Lime	Man'f. Sample	2.01	62.62	50-75	1.38	0-4.00	7.61	3.51
Connecticut Agricultural Lime	Man'f. Sample	.26	62.58	40-65	18.72	15-45	1.10	.71
Olds and Whipple, Hartford, Ct.								
Agricultural Lime " "	N. Hadley N. Hadley	—	64.08	60-75	.65	0-1.50	20.79	1.02
Rockland-Rockport Lime Co., Rockland, Me.								
R. R. Land Lime " " " " " " " " " " " " " " "	Sunderland Fall River N. Hadley Boston W. Springf'ld Beverly	.31	60.76	60-65	4.97	1-5.00	11.39	1.76
Pine Cone Hydrated Lime	N. Hadley	.05	71.74	70-74	.98	.50-2.00	1.86	.43
The Tobey Lime Co., West Stockbridge, Mass.								
Tobey Brand Agricultural Lime	Amherst	8.26	51.96	—	5.21	—	13.60	1.91
Charles Warner Co., Wilmington, Del.								
Limoid (Hydrated Lime)	Amherst	.04	47.13	47-50	34.13	31.3-33.3	.90	.99
West Stockbridge Lime Co., West Stockbridge, Mass.								
Agricultural Lime	Sunderland	.34	62.36	60-85	7.39	0-15	5.51	2.72
GROUND LIME STONE								
Cheshire Lime M'f'g. Co., Cheshire, Mass.								
Cheshire Ground Limestone	Cheshire	.04	52.66	45-50	1.48	1-5	—	2.66
F. E. Conley Lime and Fert. Co., Utica, N. Y.								
Raw Ground Lime	S. Deerfield	.13	47.53	51.50	1.30	2.30	—	10.27
Raw Ground Lime " " " " " "	N. Amherst Worcester N. Brookfield	.20	52.40	51.50	.94	2.30	—	3.81
Herbert Harris, Saylesville, R. I.								
Ground Limestone	Man'f. Sample	—	25.46	30.85	6.32	5.94	—	40.25
Ground Limestone	Attleboro	.04	41.42	30.85	5.56	5.94	—	14.37

Lime Compounds.

Laboratory Number.	Cost of 100 lbs. of Calcium and Magnesium Oxides.	Probable Composition of Lime Products as based upon foregoing Analyses.						
		Free Calcium Oxide (CaO).	Free Magnesium Oxide (MgO).	Hydrated or Slaked Lime (Calcium Hydrate $Ca(OH)_2$).	Calcium Carbonate ($CaCO_3$).	Magnesium Carbonate ($Mg\ CO_3$).	Guaranteed Calcium and Magnesium Carbonates Combined.	Magnesium Hyerate $Mg\ (O\ H)_2$.
A 52	$ .42a	—	—	50.38	39.72	—	25.00	3.10
A 9	.50b	—	—	84.17	2.37	—	30.00	6.71
A 8	.56c	3.82	10.52	76.70	3.41	—	6.00	—
A 32	.46a	—	—	52.51	19.95	—	6.00	21.18
A 39 A 41	.37c	32.58	—	42.51	23.27	—	50.00	—
A 54	.31a	10.19	—	76.02	6.32	—	trace	—
A 1	.38a	—	—	77.18	7.05	—	.28	1.92
A 2	.43a	—	—	46.20	29.89	—	.28	1.43
A 13	.49c	—	—	65.52	22.38	—	.28	1.13
A 50	.62c	41.06	1.19	45.26	10.81	—	—	—
A 51	.48c	—	—	69.93	17.31	—	—	2.00
A 45	.41c	9.44	—	68.37	2.50	—	—	—
A 15 A 28	.62c	—	—	49.66	47.29	—	—	.94
A 17 A 20 A 27 A 30 A 34 A 35	.62c	—	—	61.10	25.91	—	30.00	7.19
A 18	.60c	—	—	91.67	4.23	—	—	1.42
A 44	.35a	—	—	45.75	30.94	—	—	7.54
A 26	.52b	—	29.59	60.76	2.05	—	.5–20	6.57
A 29	.29a	—	—	73.13	12.53	—	0–25	10.69
A 53	.39a	—	—	—	93.97	3.10	82.39	—
A 4	.46b	—	—	—	84.82	2.72	97.80	—
A 12 A 36 A 37	.42b	—	—	—	93.51	1.97	97.80	—
A 7	.79a	—	—	—	45.43	13.22	87.00	—
A 31	.53a	—	—	—	73.91	11.63	87.00	—

a. Car lots in bulk for cash.
b. Car lots in paper bags for cash.
c. Car lots in cloth bags for cash.

Lime Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Chemical Analyses of Lime Products.						
		Moisture.	Calcium Oxide (CaO). Found.	Calcium Oxide (CaO). Guaranteed.	Magnesium Oxide (MgO). Found.	Magnesium Oxide (MgO). Guaranteed.	Carbonic Acid (CO_2).	Insoluble Matter.
GROUND LIME STONE (Concluded)								
The Edison Portland Cement Co., Stewartsville, N. J.								
Edison Pulverized Limestone	Framingham	.04	47.33	50.00	1.92	2-4	—	9.6
The Grangers Lime & Marble Co., W. Stockbridge, Mass								
Gound Raw Limestone	Amherst	.01	47.36	45-55	3.04	.43-8.00	—	9.1
The Hoosac Company, No. Adams, Mass.								
Ground Limestone	N. Adams	.08	53.51	53-55	.23	.50-1.50	—	3.1
The Stearns Lime Co., Danbury, Ct.								
Ground Limestone	Sunderland	.06	46.22	45.00	4.17	5.00	—	9.1
Ground Limestone " " " "	Hatfield Sunderland N. Amherst	.15	44.32	45.00	4.24	5.00	—	11.9
Ground Limestone	Fitchburg	.06	45.47	45.00	3.68	5.00	—	9.6
MARL								
Marl Products Co., Barton, Vt.								
Marl	Man'f. Sample	1.30	50.07	49.64-51.83	.28	.31	—	.9
Vermont Marl Co., Brattleboro, Vt.								
Shell-Marl Land Lime	Sunderland	3.52	48.97	50-57	.57	.50-1.00	—	2.0
Shell-Marl Land Lime	N. Hadley	2.78	46.29	50-57	.46	.50-1.00	—	6.5
Shell-Marl Land Lime	Amherst	2.16	48.60	50-57	.78	.50-1.00	—	4.4
LIME ASHES								
Hoosac Valley Lime and Marble Co., Adams, Mass.								
Adams Lime Kiln Ashes	N. Hatfield	19.76	39.20	—	.67	—	—	8.1
W. L. Mitchell, New Haven, Ct.								
Lime Kiln Ashes	Holyoke	7.44	29.76	30-45	—	—	—	30.3
Lime Kiln Ashes	Conway	18.31	40.12	30-45	.30	.50-1.50	—	8.6
New England Lime Co., Danbury, Ct.								
Adams (Mass.) Lime Ashes	Man'f. Sample	7.68	46.85	—	1.57	—	—	3.3
Canaan (Conn.) Lime Ashes	Man'f. Sample	10.53	35.79	—	12.18	—	—	2.6
GYPSUM (Sulfate of Lime or Plaster)								
American Agric. Chem. Co., Boston, Mass.								
Fine Ground Nova Scotia Land Plaster	Boston	6.11	38.68	33.00	.22	—	3.32	1.6
Bowker Fertilizer Co., Boston, Mass.								
Nova Scotia Land Plaster	Fall River	6.75	35.31	32.95	2.48	—	3.48	.7
Connecticut Adamant Plaster Co., New Haven, Ct.								
Land Plaster	Easthampton	17.67	32.97	32.34	.14	—	1.64	.8
Lister's Agric. Chem. Works, Newark, N. J.								
Nova Scotia Land Plaster	Fall River	7.69	38.22	—	.10	—	3.75	1.0
Lowell Fertilizer Co., Boston, Mass.								
Nova Scotia Land Plaster	Raynham	5.54	39.04	—	.31	—	2.26	.8

Lime Compounds.

Laboratory Number.	Cost of 100 lbs. of Calcium and Magnesium Oxides.	Probable Composition of Lime Products as based upon foregoing Analyses.							
		Free Calcium Oxide (CaO).	Free Magnesium Oxide (MgO).	Hydrated or Slaked Lime (Calcium Hydrate $Ca(OH)_2$).	Calcium Carbonate ($CaCO_3$).	Magnesium Carbonate ($MgCO_3$).	Guaranteed Calcium and Magnesium Carbonates Combined.	Calcium Sulfate, Gypsum ($Ca SO_4$). Found.	Calcium Sulfate, Gypsum ($Ca SO_4$). Guaranteed.
A 38	$ .61b	—	—	—	84.46	4.02	89.00	—	—
A 43	.45b	—	—	—	84.51	6.36	90–99	—	—
A 10	.41c	—	—	—	95.49	.48	96–99	—	—
A 3	.56b	—	—	—	82.48	8.72	87.00	—	—
A 11 A 14 A 33	.50b	—	—	—	79.08	8.87	87.00	—	—
A 48	.48a	—	—	—	81.14	7.70	87.00	—	—
A 55	—	—	—	—	89.35	.59	90–97	—	—
A 6	.53a	—	—	—	87.39	1.19	90–96	—	—
A 16	.70b	—	—	—	82.60	.96	90–96	—	—
A 25	.53a	—	—	—	86.73	1.63	90–96	—	—
A 19*	.88a	—	—	—	69.95	1.40	—	—	—
A 5*	.59a	—	—	—	53.11	—	—	—	—
A 47*	.62a	—	—	—	71.59	.63	—	—	—
A 49*	—	—	—	—	83.60	3.28	—	—	—
A 46*	—	—	—	—	63.87	25.47	—	—	—
A 24	—	—	—	—	7.01	.46	—	84.36	75.00
A 23	—	—	—	—	—	5.19	—	85.72	75.00
A 42	—	—	—	—	—	.29	—	80.03	78.51
A 22	—	—	—	—	8.28	.21	—	81.52	80.00
A 21	—	—	—	—	4.37	.65	—	88.82	80.00

* 19 Potassium oxide .44%
5 " " .39%
47 " " .23%
49 " " .90%
46 " " 2.15%

a. Car lots in bulk for cash.
b. Car lots in paper bags for cash.
c. Car lots in cloth bags for cash.

Nitrogen Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Nitrogen in 100 lbs.	
					Found.	Guaranteed.
SULFATE OF AMMONIA						
American Agric. Chem. Co., Boston, Mass.						
Sulfate of Ammonia	Boston	$69.04	503	.84	20.92	20.16
“ “ “	Fitchburg		894			
Lowell Fertilizer Co., Boston, Mass.						
Sulfate of Ammonia	Woburn	66.00	814	1.45	20.00	20.00
“ “ “	Framingham		1015			
NITRATE OF SODA						
American Agric. Chem. Co., Boston, Mass.						
Nitrate of Soda	Amherst	50.49	82	.46	15.30	15.00
Nitrate of Soda	Fall River	52.27	288	1.14	15.84	15.00
“ “ “	Deerfield		406			
“ “ “	Boston		617			
“ “ “	Sunderland		728			
Armour Fertilizer Works, Baltimore, Md.						
Nitrate of Soda	Athol	52.93	1169	1.55	16.04	14.81
Bowker Fertilizer Co., Boston, Mass.						
Nitrate of Soda	Amherst	51.28	340	.60	15.54	15.00
“ “ “	Dighton		383			
“ “ “	Bridgewater		659			
“ “ “	Leominster		925			
Nitrate of Soda	Belchertown	52.60	1219	1.58	15.94	15.00
Benjamin W. Brown Co., Concord, Mass.						
Nitrate of Soda	Concord	51.88	610	1.96	15.72	15.00
Coe-Mortimer Co., New York City.						
Nitrate of Soda	Medway	51.02	64	.22	15.46	15.00
Nitrate of Soda	Amherst	51.02	101	2.23	15.46	15.00
“ “ “	VanDeusenville		1226			
A. W. Higgins, Westfield, Mass.						
Nitrate of Soda	Sunderland	51.48	132	2.04	15.60	15.00
“ “ “	Sunderland		188			
International Agric. Corp., Buffalo, N. Y.						
Nitrate of Soda	Hockanum	50.62	223	3.48	15.34	15.00
Lister's Agric. Chem. Works, Newark, N. J.						
Nitrate of Soda	Fall River	50.56	448	2.72	15.32	15.00
Lowell Fertilizer Co., Boston, Mass.						
Nitrate of Soda	Hatfield	48.71	239	3.42	14.76	15.00
“ “ “	Raynham		346			
“ “ “	Taunton		372			
“ “ “	Taunton		365			
“ “ “	Dudley		1116			
Nitrate Agencies Co., New York City.						
Nitrate of Soda	S. Westport	50.56	380	2.28	15.32	15.00
“ “ “	Fall River		384			
“ “ “	Feeding Hills		479			
“ “ “	State Farm		536			
“ “ “	Seekonk		712			
“ “ “	N. Brookfield		991			
Nitrate of Soda	Amherst	52.07	786	.60	15.78	15.00
Sanderson Fertilizer & Chem. Co., New Haven, Ct.						
Sanderson's Nitrate of Soda	Bradstreet	49.50	76	2.81	15.00	15.00
Whitman and Pratt Rendering Co., Lowell, Mass.						
Nitrate of Soda	N. Chelmsford	50.36	663	2.54	15.26	15.63
Wilcox Fertilizer Co., Mystic, Ct.						
Nitrate of Soda	New Bedford	51.08	311	2.39	15.48	15.00

Nitrogen Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Nitrogen in 100 lbs.					
					As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Total.	
									Found.	Guaranteed.
DRIED BLOOD										
American Agri. Chem. Co., Boston, Mass.										
High Grade Dried Blood	Boston	$49.11*	502	11.78	.37	1.99	5.70	2.15	10.21	9.87
Bowker Fertilizer Co., Boston, Mass.										
Bowker's Dried Blood	Ayer	49.34*	950	12.21	.45	2.96	4.65	1.66	9.72	9.87
Coe-Mortimer Co., New York City.										
Dried Blood	Amherst	48.51*	270	10.11	.41	3.21	4.19	1.66	9.47	9.87
Dried Blood	Westford	50.62*	1086	12.93	.47	2.71	5.16	1.63	9.97	9.87
Nitrate Agencies Co., New York City.										
Dried Blood	State Farm	48.25*	534	11.26	43	.74	6.30	3.13	10.60	13.16
Dried Blood	Amherst	60.47*	1217	11.08	.06	.16	9.37	3.72	13.31	13.16
Dried Blood	State Farm	46.62*	543	10.23	.47	.30	6.56	2.80	10.13	9.87
Dried Blood	State Farm	46.55*	542	8.95	.33	.28	6.72	2.77	10.10	9.87
CALCIUM CYANAMID										
A. W. Higgins, Westfield, Mass.										
Calcium Cyanamid	Sunderland	60.53	126	1.31	—	14.86	.21	.46	15.52	14.00
" "	Sunderland		136							
" "	N. Amherst		150							
" "	Sunderland		191							
" "	N. Hadley		193							
" "	Hatfield		246							
" "	Southwick		1143							
Calcium Cyanamid	Bradstreet	57.02	142	3.49	—	13.62	.28	.72	14.62	14.00
COTTONSEED MEAL										
Buckeye Cotton Oil Co., Cincinnati, Ohio.										
Cottonseed Meal	Hadley	28.49	3	8.11	—	—	—	—	6.33	6.56
Cottonseed Meal	N. Hatfield	27.36	12	8.21	—	—	—	—	6.08	6.18
Cottonseed Meal	Bradstreet	26.42	30	9.35	—	—	—	—	5.87	6.18
Cottonseed Meal	N. Hatfield	27.99	257	8.00	—	—	—	—	6.22	6.18
Cottonseed Meal	Bradstreet	27.85	337	7.77	—	—	—	—	6.19	6.18
Cottonseed Meal	Billerica	28.44	763	7.82	—	—	—	—	6.32	6.18
A. W. Higgins, Westfield, Mass.										
Cottonseed Meal	Hatfield	30.15	7	8.89	—	—	—	—	6.70	6.59
Cottonseed Meal	Southwick	33.48	13	9.07	—	—	—	—	7.44	7.40
Cottonseed Meal	Sunderland	30.01	118	8.89	—	—	—	—	6.67	6.56
Cottonseed Meal	Sunderland	31.64	123	9.31	—	—	—	—	7.03	6.59
Cottonseed Meal	Sunderland	29.79	127	8.06	—	—	—	—	6.62	6.59
Cottonseed Meal	Sunderland	29.65	137	9.23	—	—	—	—	6.59	6.59
Cottonseed Meal	Sunderland	31.68	138	9.15	—	—	—	—	7.04	6.59
Cottonseed Meal	Sunderland	29.61	171	8.99	—	—	—	—	6.58	6.56
Cottonseed Meal	Southwick	29.92	1134	10.98	—	—	—	—	6.65	7.00
Humphreys-Godwin Co., Memphis ,Tenn.										
Dixie Brand Cottonseed Meal	Hadley	28.80	1	10.24	—	—	—	—	6.40	6.50
Dixie Brand Cottonseed Meal	Hadley	29.83	2	9.22	—	—	—	—	6.63	6.50
Dixie Brand Cottonseed Meal	Sunderland	31.41	11	10.67	—	—	—	—	6.98	6.50
Dixie Brand Cottonseed Meal	Amherst	28.30	21	9.63	—	—	—	—	6.29	6.12
Dixie Brand Cottonseed Meal	Amherst	27.04	37	8.89	—	—	—	—	6.01	6.18
Dixie Brand Cottonseed Meal	Hadley	26.82	39	8.09	—	—	—	—	5.96	6.18
Dixie Brand Cottonseed Meal	N. Hadley	28.40	172	9.89	—	—	—	—	6.31	6.18
Dixie Brand Cottonseed Meal	N. Hadley	29.12	173	9.06	—	—	—	—	6.47	6.56
Dixie Brand Cottonseed Meal	N. Hadley	28.22	174	9.69	—	—	—	—	6.27	6.18
Dixie Brand Cottonseed Meal	Sunderland	31.95	171	8.31	—	—	—	—	7.10	6.56

* No. 502	Phosphoric	Acid	5.15%
" 950	"	"	7.00%
" 270	"	"	7.36%
" 1086	"	"	7.19%
" 534	"	"	.79%
" 1217	"	"	.71%
" 543	"	"	1.47%
" 542	"	"	1.57%

Nitrogen Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Nitrogen in 100 lbs.		
					As Nitrates and Ammoniates.	Total.	
						Found.	Guaranteed.
COTTONSEED MEAL (Concluded)							
Humphreys-Godwin Co., Memphis, Tenn.							
Dixie Brand Cottonseed Meal	Sunderland	$29.07	344	9.37	—	6.46	6.18
Dixie Brand Cottonseed Meal	Hadley	29.56	434	9.64	—	6.57	6.12
High Grade Dark Cottonseed Meal	Hadley	32.85	170	7.73	—	7.30	7.50
High Grade Dark Cottonseed Meal	N. Hadley	33.97	177	8.22	—	7.55	7.50
High Grade Dark Cottonseed Meal	Florence	32.17	931	9.50	—	7.15	7.50
High Grade Dark Cottonseed Meal	Feeding Hills	33.03	480	8.56	—	7.34	7.00
Topsy Brand Dark Cottonseed Meal	Bradstreet	31.41	16	8.57	—	6.98	6.50
Topsy Brand Dark Cottonseed Meal	Sunderland	31.86	25	7.25	—	7.08	6.50
Topsy Brand Dark Cottonseed Meal	Sunderland	31.32	42	7.92	—	6.96	6.50
Topsy Brand Dark Cottonseed Meal	Sunderland	32.04	343	7.60	—	7.12	6.50
Topsy Brand Dark Cottonseed Meal	Deerfield	30.28	396	9.00	—	6.73	6.50
Topsy Brand Dark Cottonseed Meal	N. Hadley	33.84	175	8.42	—	7.52	6.50
Olds and Whipple, Hartford, Ct.							
Cottonseed Meal	Hatfield	34.33	5	9.17	—	7.63	6.50
Cottonseed Meal	Hatfield	34.15	6	8.49	—	7.59	6.50
Cottonseed Meal	Hatfield	34.15	8	8.51	—	7.59	6.50
Cottonseed Meal	Bradstreet	34.42	9	8.57	—	7.65	6.50
Cottonseed Meal	Bradstreet	32.80	10	7.86	—	7.29	6.50
Cottonseed Meal	N. Hadley	30.96	14	9.17	—	6.88	6.50
Cottonseed Meal	Bradstreet	30.87	15	8.11	—	6.86	6.50
Cottonseed Meal	Bradstreet	34.42	17	9.22	—	7.65	6.50
Cottonseed Meal	Bradstreet	34.60	18	8.32	—	7.69	6.50
Cottonseed Meal	Hatfield	34.56	22	9.41	—	7.68	6.50
Cottonseed Meal	Hatfield	33.93	23	9.08	—	7.54	6.50
Cottonseed Meal	Bradstreet	32.80	24	7.61	—	7.29	6.50
Cottonseed Meal	Hatfield	33.79	27	8.25	—	7.51	6.50
Cottonseed Meal	Bradstreet	32.80	29	7.81	—	7.29	6.50
Cottonseed Meal	Bradstreet	32.94	31	7.95	—	7.32	6.50
Cottonseed Meal	Whatley	33.84	38	7.90	—	7.52	6.50
Cottonseed Meal	Hatfield	32.76	48	7.28	—	7.28	6.50
J. E. Soper Co., 206 Chamber of Commerce, Boston, Mass.							
Pioneer Cottonseed Meal	Southwick	28.98	573	7.80	—	6.44	6.50
Pioneer Cottonseed Meal	Southwick	28.80	1059	9.46	—	6.40	6.50
Union Seed and Fert. Co., 27 Beaver St., New York City.							
Red Tag Cottonseed Meal	Hadley	26.91	4	8.45	—	5.98	6.17
Red Tag Cottonseed Meal	Hadley	26.41	19	8.75	—	5.87	6.17
Red Tag Cottonseed Meal	Hadley	29.11	20	9.57	—	6.47	6.17
Red Tag Cottonseed Meal	W. Hatfield	27.45	28	8.64	—	6.10	6.17
Red Tag Cottonseed Meal	Northampton	29.11	256	9.06	—	6.47	6.17
Red Tag Cottonseed Meal	Northampton	28.17	939	10.28	—	6.26	6.17
Red Tag Cottonseed Meal	Hadley	27.04	1057	9.57	—	6.01	6.17
Red Tag Cottonseed Meal	Hadley	26.73	1058	9.56	—	5.94	6.17
CASTOR POMACE							
Olds and Whipple, Hartford, Ct.							
Castor Pomace	Hatfield	23.63	51	8.24	—	5.25	5.00

Note—Cottonseed Meal contains on the average 2 to 3 per cent of phosphoric acid and from 1.50 to 2.50 per cent of potash of which about 1.28 per cent is water soluble.

Note—Castor pomace contains on the average 2.12 per cent phosphoric acid and 1.20 per cent of potash.

Potash Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Potash (K_2O) in 100 lbs.	
					Found.	Guaranteed.
HIGH GRADE SULFATE OF POTASH						
American Agric. Chem. Co., Boston, Mass.						
H. G. Sulfate of Potash	Amherst	$49.04	95	1.46	49.04	48.00
H. G. Sulfate of Potash	Fall River	48.64	283	1.49	48.64	48.00
" " " "	Bradstreet		334			
" " " "	Deerfield		413			
" " " "	Boston		489			
" " " "	Hatfield		1053			
H. G. Sulfate of Potash	Middleboro	49.92	1221	1.73	49.92	48.00
Berkshire Fertilizer Co., Bridgeport, Ct.						
H. G. Sulfate of Potash	N. Hadley	51.08	157	.83	51.08	48.00
Bowker Fertilizer Co., Boston, Mass.						
H. G. Sulfate of Potash	Concord	50.04	609	1.44	50.04	48.00
Coe-Mortimer Co., New York City.						
H. G. Sulfate of Potash	Medway	50.32	63	1.19	50.32	48.00
German Kali Works, Baltimore, Md.						
H. G. Sulfate of Potash	Sunderland	49.24	110	.88	49.24	47.00
" " " "	Sunderland		113			
" " " "	Sunderland		134			
" " " "	N. Hadley		182			
" " " "	Sunderland		201			
" " " "	S. Westport		388			
" " " "	Feeding Hills		476			
" " " "	State Farm		537			
" " " "	Worcester		909			
H. G. Sulfate of Potash	Amherst	51.56	262	.94	51.56	47.00
H. G. Sulfate of Potash	Amherst	52.44	263	.29	52.44	47.00
International Agric. Corp., Buffalo, N. Y.						
H. G. Sulfate of Potash	Hockanum	50.16	222	1.45	50.16	48.00
" " " "	Hatfield		244			
Lowell Fertilizer Co., Boston, Mass.						
H. G. Sulfate of Potash	Hatfield	50.28	237	.81	50.28	48.00
" " " "	S. Lowell		633			
" " " "	Fitchburg		890			
" " " "	Dudley		1111			
Sanderson Fert. & Chem. Co., New Haven, Ct.						
H. G. Sulfate of Potash	Bradstreet	50.32	100	1.44	50.32	48.00
" " " "	Sunderland		122			
Whitman and Pratt Rendering Co., Lowell, Mass.						
H. G. Sulfate of Potash	N. Chelmsford	51.04	675	1.78	51.04	48.00
Wilcox Fertilizer Co., Mystic, Ct.						
H. G. Sulfate of Potash	New Bedford	48.88	325	1.69	48.88	48.00
" " " "	Deerfield		416			
SULFATE OF POTASH—MAGNESIA						
American Agric. Chem. Co., Boston, Mass.						
Double Manure Salt	Hatfield	25.88	46	3.67	25.88	26.00
Double Manure Salt	N. Hadley	25.88	206	8.96	25.88	26.00
Double Manure Salt	Deerfield	24.76	420	7.35	24.76	26.00
Berkshire Fertilizer Co., Bridgeport, Ct.						
Double Sulfate of Potash	N. Hadley	26.18	210	2.32	26.18	25.00
Olds and Whipple, Hartford, Ct.						
Double Manure Salt	N. Hadley	28.22	196	7.46	28.22	25.94
Double Manure Salt	Hatfield	27.54	694	5.65	27.54	25.94
Double Manure Salt	Amherst	26.94	1218	8.81	26.94	25.94

Potash Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Potash (K_2O) in 100 lbs.	
					Found.	Guaranteed.
MURIATE OF POTASH						
American Agric. Chem. Co., Boston, Mass.						
Muriate of Potash	Amherst	$40.93	91	1.16	51.16	49.00
Muriate of Potash	Bradstreet	41.44	141	1.04	51.80	49.00
Muriate of Potash	Deerfield	41.02	408	1.55	51.28	49.00
" " "	S. Framingham		1090			
Armour Fertilizer Works, Baltimore, Md.						
Muriate of Potash	Athol	38.10	1178	1.85	47.62	48.00
Berkshire Fertilizer Co., Bridgeport, Ct.						
Muriate of Potash	N. Hadley	41.12	567	1.24	51.40	50.00
Bowker Fertilizer Co., Boston, Mass.						
Muriate of Potash	Amherst	40.26	342	2.41	50.32	49.00
" " "	Dighton		376			
" " "	Leominster		926			
" " "	Northampton		1063			
Muriate of Potash	Belchertown	40.86	1220	1.58	51.08	49.00
Coe-Mortimer Co., New York City.						
Muriate of Potash	Sunderland	40.16	654	2.12	50.20	49.00
" " "	W. Springfield		752			
" " "	Westford		1087			
" " "	VanDeusenville		1225			
German Kali Works, Baltimore, Md.						
Muriate of Potash	Fall River	39.39	282	1.20	49.24	48.00
" " "	Feeding Hills		475			
" " "	Seekonk		709			
Muriate of Potash	State Farm	42.21	535	1.40	52.76	48.00
Muriate of Potash	S. Westport	40.03	387	.05	50.04	48.00
Muriate of Potash	Amherst	41.60	1003	1.39	52.00	48.00
Lowell Fertilizer Co., Boston, Mass.						
Muriate of Potash	Hatfield	39.39	241	2.77	49.24	50.00
" " "	Taunton		371			
" " "	Concord		608			
" " "	Dudley		1109			
Sanderson Fert. & Chem. Co., New Haven, Ct.						
Muriate of Potash	Man'f. Sample	40.50	1233	1.79	50.62	49.00
Whitman & Pratt Rend. Co., Lowell, Mass.						
Muriate of Potash	N. Chelmsford	40.93	677	.62	51.16	49.00
Wilcox Fertilizer Co., Mystic, Ct.						
Muriate of Potash	New Bedford	41.54	297	1.14	51.92	50.00
KAINIT						
American Agric. Chem. Co., Boston, Mass.						
Genuine German Kainit	Boston	11.26	499	1.32	14.08	12.00
" " "	Boston		588			
" " "	Worcester		910			
Bowker Fertilizer Co., Boston, Mass.						
Genuine German Kainit	Boston	11.12	672	.96	13.90	12.00
German Kali Works, Baltimore, Md.						
Kainit	New Bedford	10.54	306	3.06	13.18	12.00
"	Framingham		1010			
Wilcox Fertilizer Co., Mystic, Ct.						
Kainit	New Bedford	10.46	309	4.33	13.08	12.00

Phosphoric Acid Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Phosphoric Acid in 100 lbs.						
					Water Soluble.	Reverted.	Insoluble.	Total.		Available.	
								Found.	Guaranteed.	Found.	Guaranteed.
DISSOLVED BONE BLACK											
Amer. Agri. Chem. Co., Boston, Mass											
Dissolved Bone Black	Amherst	$14.40	265	13.54	14.71	1.33	.26	16.30	16.00	16.04	15.00
Dissolved Bone Black	Amherst	15.12	1001	12.23	15.22	1.77	—	16.99	16.00	16.99	15.00
Dissolved Bone Black	Worcester	13.85	1092	16.89	11.74	3.41	1.38	16.53	16.00	15.15	15.00
ACID PHOSPHATE											
Amer. Agr. Chem. Co., Boston, Mass.											
Plain Superphosphate	Bradstreet	15.50	87	11.59	11.61	5.41	1.81	18.83	17.00	17.02	16.00
Plain Superphosphate	Amherst	13.26	105	12.45	10.75	4.20	.54	15.49	15.00	14.95	14.00
Plain Superphosphate	Fall River	12.81	291	10.36	10.18	4.16	.79	15.13	15.00	14.34	14.00
" "	Deerfield		400								
" "	Boston		587								
" "	Fitchburg.		893								
" "	Worcester		908								
Plain Superphosphate	Boston	12.26	504	11.13	8.71	5.22	.59	14.52	13.00	13.93	12.00
Bowker Fertilizer Co., Boston, Mass.											
Bowker's Acid Phosphate	Dighton	13.11	381	12.71	11.35	3.50	.23	15.08	15.00	14.85	14.00
" " "	Ayer		957								
Coe-Mortimer Co., New York City.											
E. Frank Coe's H.G. Sol. Phos.	Westford	12.31	1123	12.57	11.16	2.46	74	14.36	15.00	13.62	14.00
E. Frank Coe's H.G. Sol. Phos.	Framingham	12.98	1248	8.71	11.58	2.88	.64	15.10	15.00	14.46	14.00
A. W. Higgins, Westfield, Mass.											
Acid Phosphate	Sunderland	15.08	114	12.06	14.03	2.91	.31	17.25	—	16.94	16.00
" "	Sunderland		133								
" "	N. Hadley		192								
" "	Sunderland		200								
Int. Agr. Corp., Buffalo, N. Y.											
Acid Phosphate	Hockanum	15.37	221	12.57	13.71	3.46	.64	17.81	17.00	17.17	16.00
Lowell Fertilizer Co., Boston, Mass.											
Lowell Acid Phosphate	S. Lowell	11.83	647	10.42	8.29	5.33	.28	13.90	14.00	13.62	12.00
Lowell Acid Phosphate	Dudley	14.42	1110	11.91	11.45	5.10	.08	16.63	15.00	16.55	14.00
National Fertilizer Co., Boston, Mass											
Plain Superphosphate	Sunderland.	11.08	214	13.94	8.16	3.90	1.56	13.62	15.00	12.06	14.00
" "	Sunderland.		1137								
Nitrate Agencies Co., N. Y. City.											
Acid Phosphate	Fall River	14.36	281	9.64	13.07	3.05	.41	16.53	15.00	16.12	14.00
" "	S. Westport		392								
" "	Feed. Hills.		473								
" "	State Farm.		540								
" "	Seekonk		715								
High Grade Acid Phosphate	Amherst	15.03	272	12.97	14.32	2.57	.20	17.09	17.00	16.89	16.00
Sanderson F. & C. Co., New Haven, Ct.											
Acid Phosphate	Sunderland.	13.99	139	15.36	11.61	4.12	.61	16.34	—	15.73	16.00
Plain Superphosphate	Bradstreet	13.69	140	11.90	9.67	5.61	1.25	16.53	—	15.28	14.00
" "	Three Rivers		1042								
Whitman & Pratt Rendering Co. Lowell, Mass.											
W. & P. Acid Phosphate	N. Chelms.	15.68	676	12.20	14.06	3.06	1.45	18.57	—	17.12	16.00
Wilcox Fert. Co., Mystic, Ct.											
Acid Phosphate	NewBedford	14.72	301	11.96	10.63	5.85	1.17	17.65	16.00	16.48	15.50
" "	Deerfield		418								

Phosphoric Acid Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Phosphoric Acid in 100 lbs.						
					Water Soluble.	Reverted.	Insoluble.	Total.		Available.	
								Found.	Guaranteed.	Found.	Guaranteed.
BASIC SLAG PHOSPHATE											
Amer. Agr. Chem. Co., Boston, Mass											
Basic Slag	Boston	$14.03	500	.09	—	16.47	2.13	18.60	17.00	16.47	—
" "	Fitchburg		900								
Bowker Fert. Co., Boston, Mass.											
Thomas Phosphate Powder	Boston	14.09	671	.07	—	16.52	2.18	18.70	17.00	16.52	—
" " "	Leominster		927								
Coe-Mortimer Co., New York City.											
Thomas Phosphate Powder	N. Amherst	13.86	58	.10	—	16.28	2.09	18.37	17.00	16.28	15.00
" " "	Concord		600								
" " "	Sunderland		656								
" " "	W. Sp'fld.		749								
" " "	Billerica		805								
Thomas Phosphate Powder	Medway	14.30	65	—	—	17.12	1.50	18.62	17.00	17.12	15.00
Thomas Phosphate Powder	Amherst	14.75	271	.16	—	17.11	2.66	19.77	17.00	17.11	15.00
Lowell Fertilizer Co., Boston, Mass.											
Basic Slag	S. Lowell	12.49	630	.12	—	13.69	3.85	17.54	17.00	13.69	—
" "	Dudley		1118								
Nitrate Agencies Co., N. Y. City											
H. A. Brand Basic Slag	S. Westport	13.17	385	.06	—	15.46	1.99	17.45	17.00	15.46	14.00
" " " "	Feed. Hills		478								
" " " "	State Farm		539								
" " " "	Lawrence		599								
" " " "	Seekonk		710								
" " " "	Millis		768								
Sanderson Fert. & Chem. Co. New Haven, Ct.											
Thomas Phosphate Powder	Man'f.Sample	14.73	1234	.28	—	16.38	4.08	20.46	17.00	16.38	15.00
Whitman & Pratt Rend. Co. Lowell, Mass.											
Basic Slag	N. Chelmsfd.	13.23	683	.11	—	14.82	3.42	18.24	17.00	14.82	—
Wilcox Fertilizer Co., Mystic, Ct.											
Basic Slag Meal	Amherst	12.86	90	.25	—	15.05	2.04	17.09	16.00	15.05	14.00
PRECIPITATED PHOSPHATE											
Berkshire Fert. Co., Bridgeport, Ct.											
Precipitated Phosphate	N. Hadley	21.32	209	21.07	5.27	20.38	.71	26.36	25.00	25.65	20.00†
National Fert. Co., Boston, Mass.											
Precipitated Bone	Hatfield	22.88	248	4.14	.89	27.30	.61	38.86	—	28.19	—
MISCELLANEOUS PHOSPHATES											
Beatey's Unadulterated Phos. Co. Boston, Mass.											
Beatey's Natural B. P. L. Fert.	Man'f.Sample	12.31	930	.51	—	—	—	30.77	31.00	—	—
Hudson Carbon Co., Ballston Spa, N.Y.											
Davidge's Special Phosphorus	Man'f.Sample	10.53	1250*	7.90	.13	3.34	19.34	22.81	5.00	3.47	—

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*No. 1250 contains trace of potash, 1.39% total nitrogen of which .47% is water soluble, .48% active and .44% inactive by the alkaline permanganate method. Nitrogen not included in valuation.

† 16.72% iron and alumina oxides.

CONTROL SERIES. BULLETIN No. 3 OCTOBER, 1915.

MASSACHUSETTS
AGRICULTURAL EXPERIMENT
STATION

Inspection of Commercial Feedstuffs

BY

P. H. SMITH and C. L. BEALS

This bulletin contains the results of the protein, fat and fiber determinations and a statement of the certified ingredients, together with a general discussion of the feeding value of commercial feedstuffs found in the Massachusetts markets during the year ending September 1, 1915. In addition will be found complete fodder analyses of many of the more important brands, also two special articles entitled "Feeding Standards and the Dairy Cow" and "Information of Interest to Dairymen", both of which deal with our present knowledge of feeding practice. A tabulated list of the wholesale cost of feedstuffs for the year based upon Boston rate, is also given.

Requests for bulletins should be addressed to the
AGRICULTURAL EXPERIMENT STATION,
AMHERST, MASS.

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J. B. LINDSEY, *Chemist.*

Inspection of Commercial Feedstuffs

By P. H. SMITH, *Chemist in Charge.**

Assisted by

C. L. BEALS and J. T. HOWARD

INTRODUCTION.

This bulletin contains the results of the inspection of commercial feedstuffs offered for sale in Massachusetts during the year ending September 1, 1915. Ten hundred and forty-three samples were collected at 168 different places of business. Over 1100 brands of feeding stuffs have been registered and permits for sale issued.

During the past year business conditions, owing to the European war, have been such that the feeding stuff situation has been decidedly abnormal. Cereal grains have ruled high while the price of many of the cereal by-products, owing principally to the fact that the normal export outlet had been shut off, bore little relation to the price obtained for whole grains. This situation has led to an exceptional opportunity for the use of discretion and intelligence in the purchase of feeding stuffs.

The beginning of what eventually may be an important movement for New England farmers has also been noted in the shipment of California feeding stuffs to New England ports by way of the Panama Canal. Shipments of barley, oats, alfalfa meal, malt sprouts and some molasses feeds have been received. If local freight rates to inland points do not offset the cheap rate for water transportation, this new source of feeding stuffs should prove of benefit.

The sale of the so-called molasses feeds continues to increase. Forty brands of such feeds were collected. Many contained low grade by-products while others consisted of molasses and alfalfa, to which was often added cracked corn or oats. The use of alfalfa when it can be home grown is advocated. The advisability of using it in the form of prepared feeds where it costs the consumer grain prices is questionable.

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*The collection of samples and inspection were carried out by Mr. Howard. Practically all of the analyses were made by Mr. Beals.

Owing to the demand for the complete analyses of some of the principal feeding stuffs, this publication contains a tabulation giving such data. Material of local interest, mixed and sold by the retailer, is not included.

The writer holds an appointment from the Federal Government as commissioned State Official which gives authority to take samples which enter into interstate commerce and submit them, together with the necessary data, to the United States Department of Agriculture. In the event of misrepresentation or fraud, cases may be entered against the shippers instead of the local dealer. The co-operation of dealers and others interested in the sale of feeding stuffs will be appreciated.

Consumers of cattle feeds can feel assured that their interests are being continually safeguarded in so far as the financial ability of the station permits. A regular and experienced inspector is kept on the road for fully six months in the year collecting samples which are being continually examined in the experiment station laboratory. He also is careful to note whether the state law is being fully complied with. The station cannot prohibit the sale of any material which is not injurious and which possesses feeding value. It can require that every feedstuff offered be properly named and guaranteed, both as to its components (in case of mixed feeds) and the chemical composition. The purchaser will have to decide, with the advice of the experiment station if desired, whether the feed is worth the price asked. Information in addition to that contained in the feed bulletins will be cheerfully forwarded at all times.

CHEMICAL ANALYSIS OF FEEDSTUFFS.

1914-1915 [*Fall and Winter.*]

I Protein Feeds

COTTONSEED MEAL.

Definitions. *COTTONSEED MEAL is the ground residue obtained in the extraction of oil from the cottonseed kernel.
CHOICE cottonseed meal contains at least 41 per cent protein.
PRIME cottonseed meal contains from 38.5 to 41 per cent protein.
GOOD cottonseed meal contains from 36 to 38.5 per cent protein.
COTTONSEED FEED is a mixture of cottonseed meal and cottonseed hulls containing less than 36 per cent protein.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
CHOICE		%	%	%	%	%	%
F. W. Brode & Co., Memphis, Tenn.							
Owl............Sumner Crosby & Son......	Boston..........	43.65	41.00	7.40	6.00	7.57	10.00
Owl............J. O. Ellison & Co..........	Haverhill........	41 07	41.00	7.19	6 00	9.00	10.00
Owl............J. O. Ellison & Co..........	Haverhill........	42 29	41.00	7.82	6.00	8.23	10.00
Owl............C. A. Pierce...............	Hinsdale........	43.87	41.00	8.85	6.00	6.58	10.00
Owl............Beaver Coal & Grain Co.....	Norwood........	45.09	41.00	6.84	6.00	7.80	10.00
Buckeye Cotton Oil Co., Cincinnati, Ohio.							
**Buckeye......G. M. Foster Est...........	Lowell..........	42.47	38.62	6.88	6.00	8.50	12.00
**Buckeye......North Hatfield Grain Co....	N. Hatfield......	41.16	38.62	7.46	6.00	10.10	12.00
S. P. Davis, Little Rock, Ark.							
Good Luck......Bond Grain Co...........	Charlton........	42.03	41.00	7.43	7.00	9.35	9.00
Good Luck.....S. L. Davenport & Son......	N. Grafton......	41.33	41.00	7.73	7.00	10.00	9.00
Humphreys, Godwin & Co., Memphis, Tenn.							
Dixie..........Mansfield Milling Co.......	Mansfield.......	45.77	38 62	7.02	6.00	9.93	12.00
Dixie..........J. B. Bridges & Co.........	S. Deerfield......	44.22	38.62	8.51	6.00	6.70	12 00
Dixie..........H. C. Puffer Co............	Springfield.......	41.94	38.62	7.87	6.00	9.25	12 00
Dixie..........A. J. Richards & Son.......	Weymouth......	41 94	38.62	8.02	6.00	9.89	12.00
Dixie..........P. W. Eaton & Co..........	Williamstown....	41.77	38.62	8.60	6.00	8.35	12.00
Forfat.........H. G. Hill Co..............	Williamsburg....	41.47	38.62	7.52	6.00	10.40	12.00
Planters Cotton Oil Co., Dallas, Texas.							
B. W. Brown Co...........	Concord.........	45.53	44.00	6.52	7.00	9.90	9.00
W. Newton Smith, Baltimore, Md.							
Dirigo.........W. E Bryant & Co.........	Brockton........	41 68	41.00	7.53	7.00	9.90	10.50
Dirigo.........Mackenzie & Winslow.......	Fall River.......	42 64	41.00	7.38	7.00	10.63	10.50
Dirigo.........Rollstone Grain Co.........	Fitchburg.......	41.07	41.00	7.45	7.00	9.10	10.50
Dirigo.........Hingham Grain Mill, Inc,...	Hingham........	41.59	41.00	8.71	7.00	8.30	10.50
J. E. Soper Co., Boston, Mass.							
Pioneer........A. Dodge & Sons Corp......	Beverly.........	42.03	41.00	9.70	7.00	6.71	10.00
Pioneer........Ropes Bros................	Danvers.........	43.34	41.00	8.62	7.00	8.13	10 00
Pioneer........C. B. Sampson.............	Holyoke.........	44.83	41 00	8.19	7.00	7.88	10 00
Pioneer........E. C. Frost...............	Shelburne Falls..	42.64	41.00	6.91	7.00	9.21	10 00
Pilgrim.........F. F. Woodward & Co......	Fitchburg.......	41.94	38.50	7.99	5.00	8.94	10.00
Pilgrim.........H. K. Webster Co..........	Lawrence........	43.48	38.50	9.57	5.00	5.88	10.00
Southern Cotton Oil Co., Charlotte, N. C.							
Aurora.........J. B. Garland & Son........	Worcester.......	43.08	41.00	8.19	7.00	7.61	10.00
Union Brokerage & Com. Co., Vicksburg, Miss.							
Durjan.........J. H Nye.................	Brockton........	47.28	41.00	8.02	7.50	6.35	10.00
Durjan.........H. K. Webster Co..........	Lawrence........	42.12	41.00	7.82	7.50	8 65	10.00
Magnolia.......Bedford Coal & Grain Co....	Bedford.........	42.73	38 62	8.68	7.50	7.50	10 00
Magnolia.......John Shea.................	Lawrence........	45 09	38.62	9.00	7.50	6.75	10 00
Magnolia.......H. Bruckman...............	Lawrence........	45.58	38.62	8.93	7.50	5.90	10.00

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*Definitions used in connection with these tables merely indicate our basis of classification. In so far as possible they are based on trade usage, and are subject to future change and revision.

**Marked Prime.

COTTONSEED MEAL.—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar
		%	%	%	%	%	%
Union Seed & Fertilizer Co., New York.							
Yellow Tag.....J. A. Griffith	Gt. Barrington	41.16	41.18	8.64	8.00	10.59	10.00
Yellow Tag.....H. P. Howland	Spencer	42.64	41.18	7.17	8.00	8.99	10.00
Red Tag.......W. N. Potter's Sons	Springfield	41.03	38.55	8.40	7.00	8.15	11.50
PRIME							
F. W. Brode & Co., Memphis, Tenn.							
Dove..........J. B. Cover & Co.	Lowell	40.54	38.63	6.77	6.00	9.70	10.00
Dove..........J. B. Garland & Son	Worcester	39.84	38.63	6.48	6.00	10.95	10.00
Buckeye Cotton Oil Co., Cincinnati, Ohio.							
Buckeye.......M. E. Ballou & Son	Becket	40.37	38.62	6.83	6.00	11.01	12.00
Buckeye.......A. M. Haggart & Son	Franklin	40.11	38.62	6.00	6.00	11.68	12.00
Buckeye.......Geo. F. Wetherbee Co.	Gardner	38.79	38.62	6.83	6.00	11.51	12.00
Buckeye.......Prentiss Brooks & Co.	Holyoke	38.88	38.62	7.28	6.00	11.41	12.00
Buckeye.......G. M. Foster Est.	Lowell	38.96	38.62	7.69	6.00	12.00	12.00
Buckeye.......J. W. Doon & Son	Natick	40.19	38.62	6.54	6.00	10.73	12.00
Farmers' Cotton Oil & Trading Co., Uniontown, Ala.							
O. H. Fiske	Huntington	38.79	41.00	6.53	9.00	11.41	7.00
D. H. Hickey & Co., Memphis, Tenn.							
Canary........A. T. Butler	Adams	39.93	41.00	7.67	6.00	11.88	10.00
Humphreys, Godwin & Co., Memphis, Tenn.							
Dixie..........G. F. Green Coal Co.	Campello	40.72	38.62	8.55	6.00	10.41	12.00
Dixie..........C. F. Pease	Chester	39.41	38.62	6.07	6.00	11.11	12.00
Dixie..........A. J. Richards & Son	Weymouth	39.23	38.62	7.82	6.00	10.33	12.00
Forfat.........W. K. Gilmore & Sons	Franklin	39.93	38.62	7.20	6.00	9.70	12.00
Forfat.........Conant & Co.	Littleton	39.23	38.62	8.27	6.00	10.00	12.00
Forfat.........W. L. Palmer	Medway	39.84	38.62	6.77	6.00	10.62	12.00
Forfat.........Sparrow & Co.	Northboro	40.28	38.62	9.31	6.00	8.28	12.00
Forfat.........Taunton Grain Co.	Taunton	40.02	38.62	9.60	6.00	9.50	12.00
Forfat.........Whitman Coal & Grain Co.	Whitman	40.37	38.62	6.97	6.00	10.80	12.00
W. Newton Smith, Baltimore, Md.							
Dirigo.........A. H. Wood & Co.	Framingham	39.84	41.00	8.58	7.00	9.00	10.50
Dirigo.........O. H. Fiske	Huntington	40.63	41.00	7.93	7.00	9.23	10.50
J. E. Soper Co., Boston, Mass.							
Pilgrim........W. J. Meek	Fall River	39.41	38.50	6.90	5.00	8.84	10.00
Pilgrim........M. G. Williams	Raynham	40.89	38.50	7.24	5.00	9.20	10.00
Pilgrim........N. Adams Flour & Grain Co	N. Adams	40.81	38.50	7.63	5.00	9.30	10.00
Pioneer........Morse Bros.	Southbridge	40.37	38.50	7.97	5.00	9.59	10.00
Swift & Co. Oil Mill, Atlanta, Ga.							
Wilder & Wotton	Lowell	40.72	38.62	6.37	6.00	9.82	10.00
Union Seed & Fertilizer Co., New York.							
Red Tag.......W. Lord	Athol	39.58	38.55	7.94	7.00	11.80	11.50
Red Tag.......J. N. Waite	Easthampton	40.37	38.55	6.39	7.00	11.00	11.50
GOOD							
F. W. Brode & Co., Memphis, Tenn.							
Dove..........Pierce & Winn	Arlington	38.05	38.62	9.43	6.00	12.30	10.00
Buckeye Cotton Oil Co., Cincinnati, Ohio.							
Buckeye.......Union Coal, Ice & Grain Co	S. Lancaster	37.53	38.62	5.56	6.00	11.49	12.00
Buckeye.......Taunton Grain Co.	Taunton	37.54	38.62	7.13	6.00	12.48	12.00
Humphreys, Godwin & Co., Memphis, Tenn.							
Forfat.........Bryant & Soule	Middleboro	37.48	38.62	8.64	6.00	11.65	12.00
J. E. Soper Co., Boston, Mass.							
Pilgrim........Eastern Grain Co.	Bridgewater	37.21	38.50	7.37	5.00	12.08	10.00
Pilgrim........W. J. Meek	Fall River	38.24	38.50	7.03	5.00	10.66	10.00
COTTONSEED FEED							
Humphreys, Godwin & Co., Memphis, Tenn.							
77 Feed Meal...Ropes Bros.	Danvers	21.10	20.00	3.93	4.00	22.56	28.00

LINSEED MEAL.

Definition—Linseed Meal is the ground residue obtained in the extraction of oil from flaxseed.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
1. NEW PROCESS		%	%	%	%	%	%
American Linseed Co., New York.							
Cleveland Flax Meal—Ropes Bros.	Danvers	36.69	36.00	2.99	2.00	8.62	9.00
Cleveland Flax Meal—Ropes Bros.	Salem	36.18	36.00	2.63	2.00	9.06	9.00
Cleveland Flax Meal—Ropes Bros.	Salem	38.79	36.00	2.38	2.00	8.20	9.00
Hypro.........Mackenzie & Winslow	Fall River	38.44	36.00	2.63	2.00	7.50	9.00
Hypro.........M. G. Williams	Raynham	36.86	36.00	2.72	2.00	9.60	9.00
Hypro.........Taunton Grain Co.	Taunton	36.23	36.00	2.22	2.00	9.21	9.00
Hypro.........C. G. Jordan	Weymouth	36.16	36.00	2.68	2.00	9.08	9.00
2. OLD PROCESS							
American Linseed Co., New York.							
Sumner Crosby & Sons	Boston	35.38	34.00	5.23	5.00	7.48	8.00
J. H. Nye	Brockton	37.13	34.00	5.37	5.00	7.42	8.00
F. F. Woodward & Co.	Fitchburg	35.38	34.00	8.22	5.00	7.33	8.00
Geo. F. Wetherbee Co.	Gardner	38.61	34.00	5.80	5.00	7.16	8.00
C. A. Pierce	Hinsdale	37.65	34.00	7.04	5.00	7.50	8.00
Bryant & Soule	Middleboro	35.90	34.00	5.95	5.00	8.39	8.00
Bryant & Soule	Middleboro	36.43	34.00	5.78	5.00	8.05	8.00
Knight Grain Co.	Newburyport	36.60	34.00	6.01	5.00	8.05	8.00
W. N. Potters Sons	Springfield	35.99	34.00	5.56	5.00	7.78	8.00
Jacquith & Co.	Woburn	36.08	34.00	5.38	5.00	7.95	8.00
American Milling Co., Peoria, Ill.							
Amco..........A. M. Haggart & Son	Franklin	32.31	30.00	6.68	5.00	7.20	10.00
Kelloggs & Miller, Amsterdam, N. Y.							
W. Lord	Athol	37.39	32.00	5.74	4.00	7.58	9.00
A. H. Wood & Co.	Framingham	36.51	32.00	6.00	4.00	7.74	9.00
W. N. Potter Grain Co.	Princeton	35.99	32.00	5.98	4.00	7.50	9.00
Mann Bros. Co., Buffalo, N. Y.							
Mackenzie & Winslow	New Bedford	35.44	34.00	6.98	6.00	7.60	10.00
Midland Linseed Products Co., Minneapolis							
C. S. Barber	Bernardston	35.55	32.00	7.88	5.00	7.65	9.50
Ropes Bros.	Danvers	34.76	32.00	7.90	5.00	7.35	9.50
Plummer & Jennings Gr Co.	New Bedford	35.96	32.00	6.93	5.00	7.75	9.50
Toledo Seed & Oil Co., Toledo, Ohio.							
Major.........Sumner Crosby & Son	Boston	31.88	30.00	8.59	5.00	8.53	10.00
Major.........Mansfield Milling Co.	Mansfield	32.09	30.00	6.60	5.00	9.00	10.00
Major.........W. L. Palmer	Medway	31.18	30.00	6.37	5.00	8.87	10.00
Major.........J. W. Doon & Son	Natick	33.42	30.00	6.56	5.00	9.09	10.00

MISCELLANEOUS OIL CAKE MEALS.

American Hominy Co., Indianapolis, Ind.							
Homcoline......Mackenzie & Winslow	Fall River	19.96	17.00	9.12	5.00	3.40	7.00
Homcoline......Lexington Grain Co.	Lexington	20.75	17.00	7.82	5.00	5.28	7.00
Oil Seeds Co., New York, N. Y.							
Peanut Oil Meal (Alpha) A. H. Wood & Co.	Framingham	45.53	40.00	9.68	7.00	3.66	7.00
Peanut Oil Meal (Beta) A. H. Wood & Co.	Framingham	33.36	30.00	9.03	7.00	8.40	8.00
Sesame Oil Meal........A. H. Wood & Co.	Framingham	41.51	35.00	12.26	8.00	4.90	10.00

GLUTEN MEAL.

Definition—Gluten Meal is a product obtained in the manufacture of starch and glucose from corn, and consists largely of the flinty portion of the kernel.

Corn Products Refining Co., New York.							
Diamond.......A. Dodge & Sons Corp.	Beverly	47.54	40.00	1.83	1.50	0.90	4.00
Diamond.......W. J. Meek	Fall River	42.64	40.00	2.50	1.50	0.98	4.00
Diamond.......Geo. F. Wetherbee Co.	Gardner	45.53	40.00	1.16	1.50	1.63	4.00
Diamond.......Geo. F. Wetherbee Co.	Gardner	45.18	40.00	1.79	1.50	2.22	4.00
Diamond.......Martin Euler	Lee	45.88	40.00	1.04	1.50	1.15	4.00
Diamond.......P. Foisy	New Bedford	45.15	40.00	1.67	1.50	0.90	4.00
Diamond.......M. G. Williams	Raynham	46.58	40.00	0.94	1.50	1.00	4.00
Diamond.......Geo. S. Nichols	Rehoboth	47.96	40.00	0.83	1.50	0.64	4.00
Diamond.......Whitman Coal & Grain Co.	Whitman	46.05	40.00	0.77	1.50	0.86	4.00
Diamond.......Whitman Coal & Grain Co.	Whitman	45.97	40.00	0.87	1.50	0.70	4.00

GLUTEN FEED.

Definition—Gluten Feed is a product obtained in the manufacture of starch and glucose from corn, and consists largely of the flinty portion of the kernel and corn bran.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
American Maize Products Co., New York.							
Cream of Corn. . Mackenzie & Winslow	Fall River	25.31	23.00	1.44	2.50	5.75	8.50
Cream of Corn. . G. M. Foster Est.	Lowell	25.57	23.00	1.88	2.50	8.19	8.50
Cream of Corn. . North Hatfield Grain Co.	N. Hatfield	26.27	23.00	2.37	2.50	5.25	8.50
Cream of Corn. . W. P. Barney	Seekonk	23.53	23.00	3.95	2.50	8.90	8.50
Clinton Sugar Refining Co., Clinton, Iowa.							
Clinton........J. E. Merrick & Co.	Amherst	26.36	23.00	3.54	3.00	7.00	8.00
Corn Products Refining Co., New York.							
Buffalo.........W. E. Bryant & Co.	Brockton	28.63	23.00	3.10	1.00	7.00	8.50
Buffalo.........A. M. Haggart & Son.	Franklin	29.33	23.00	2.19	1.00	5.90	8.50
Buffalo.........Martin Euler	Lee	28.02	23.00	3.32	1.00	4.15	8.50
Buffalo.........Lenox Coal Co.	Lenoxdale	29.68	23.00	1.23	1.00	6.55	8.50
Buffalo.........Mansfield Milling Co.	Mansfield	28.72	23.00	1.87	1.00	6.83	8.50
Buffalo.........P. Foisy	New Bedford	25.19	23.00	2.12	1.00	5.90	8.50
Buffalo.........W. N. Potters Sons & Co.	Northampton	30.03	23.00	1.80	1.00	5.73	8.50
Buffalo.........A. N. Whittemore & Co.	Worcester	25.66	23.00	3.72	1.00	6.54	8.50
Globe..........Scott Grain Co.	Amesbury	28.89	23.00	2.80	1.00	4.00	8.50
Douglas Co., Cedar Rapids, Iowa.							
Douglas........W. B. Herrick	Beverly	24.60	23.00	2.00	2.00	6.40	8.00
Douglas........M. H. Rolfe Est.	Newburyport	26.18	23.00	2.70	2.00	5.79	8.00
Douglas........W. C. Whitcher	Stoneham	22.64	23.00	2.53	2.00	7.29	8.00
Douglas........Curley Bros	Wakefield	24.61	23.00	2.74	2.00	6.05	8.00
J. C. Hubinger Bros. Co., Keokuk, Iowa.							
K. K. K........Weld & Beck	Southbridge	26.79	23.00	4.01	2.60	5.98	7.50
A. E. Staley Manufacturing Co., Decatur, Ill.							
Staley's........Attleboro Grain Co.	Attleboro	25.83	23.00	3.78	2.50	6.21	12.00
Staley's........C. S. Barber	Bernardston	26.62	23.00	3.15	2.50	5.50	12.00
Staley's........C. B. Sampson	Holyoke	24.52	23.00	3.73	2.50	6.52	12.00

DISTILLERS' DRIED GRAINS.

Definition—Distillers' Dried Grains are the dried residue obtained from cereals in the manufacture of alcohol and distilled liquors.

Ajax Milling & Feed Co., New York.							
Ajax Flakes.....C. S. Barber	Bernardston	31.09	30.00	10.88	11.00	9.11	14.00
Ajax Flakes.....Eastern Grain Co	Bridgewater	28.63	30.00	9.99	11.00	10.63	14.00
Ajax Flakes.....Eastern Grain Co	Bridgewater	32.84	30.00	11.95	11.00	10.43	14.00
Ajax Flakes.....Plummer & Jennings Gr Co.	New Bedford	33.10	30.00	11.15	11.00	9.08	14.00
Ajax Flakes.....W. N. Potter & Sons	Springfield	29.51	30.00	10.22	11.00	10.00	14.00
Atlantic Export Co., Chicago, Ill.							
Atlantic........Bond Grain Co	Charlton	29.24	28.00	8.33	8.00	10.87	13.00
Continental Cereal Co., Peoria, Ill.							
Continental.....N. Hatfield Grain Co	N. Hatfield	28.63	29.00	7.71	10.00	6.71	10.00
Continental.....Potter Grain Co.	Shelburne Falls	30.29	29.00	8.48	10.00	7.20	10.00
Continental.....P. W. Eaton & Co.	Williamstown	31.44	29.00	8.55	10.00	6.65	10.00
Dewey Bros Co., Blanchester, Ohio.							
Corn 3D.......J. Cushing & Co.	Fitchburg	27.58	26.00	9.61	9.00	7.95	13.00
Buckeye.......H. C. Puffer Co.	Springfield	21.28	20.00	3.18	5.00	12.50	15.00
Eagle 3D.......A. Dodge & Sons Corp.	Beverly	31.53	30.00	12.00	10.00	10.20	13.00
Eagle 3D.......A. Dodge & Sons Corp.	Beverly	28.89	30.00	12.39	10.00	11.25	13.00
Eagle 3D.......Bond Grain Co.	Charlton	30.56	30.00	11.93	10.00	11.38	13.00
Eagle 3D.......A. T. Knight & Co.	Hudson	32.93	30.00	12.80	10.00	11.50	13.00
Eagle 3D.......C. B. Sawin & Son	Southboro	33.54	30.00	13.33	10.00	12.96	13.00
Eagle 3D.......H. C. Puffer Co.	Springfield	30.47	30.00	13.58	10.00	8.60	13.00
Eagle 3D.......J. B. Garland & Son	Worcester	31.18	30.00	11.81	10.00	11.05	13.00
Eagle 3D.......W. W. Holmes	Webster	31.35	30.00	10.92	10.00	11.32	13.00
Larrowe Milling Co., Detroit, Mich.							
Brownie........P. Foisy	New Bedford	26.94	26.00	9.47	7.00	6.87	9.00

DISTILLERS' DRIED GRAINS.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Ubiko Milling Co., Cincinnati, Ohio.							
Fourex.........W. E. Bryant & Co..........	Brockton........	32.58	31.00	8.33	12.00	12.15	13.00
Fourex.........F. F. Woodward Co.........	Fitchburg.......	31.79	31.00	7.13	12.00	12.44	13.00

MALT SPROUTS.

Definition—Malt Sprouts consists of the dried sprouts of the barley grain removed after the process of malting.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.
American Malting Co., Buffalo, N. Y.							
J. B. Garland & Son.........	Worcester......	22.86	24.65	1.35	1.82	13.58	14.35
Chas. M. Cox Co., Boston, Mass.							
B. W. Brown Co........	Concord...	24.34	25.00	1.05	1.00	16.33	16.00
Larrowe Milling Co., Detroit, Mich.							
Knight Grain Co...........	Newburyport....	25.22	23.00	1.11	1.50	12.81	16.00

BREWERS' DRIED GRAINS.

Definition—Brewers' Dried Grains are the dried residue obtained from cereals in the manufacture of malted liquors.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.
Anheuser Busch Brewing Assn., St. Louis, Mo.							
J. B. Garland & Son........	Worcester.......	33.89	21.00	6.62	6.00	12.09	18.00
Farmers' Feed Co., New York.							
Bull...........A. Dodge & Sons Corp......	Beverly.........	34.06	27.20	7.42	6.30	10.16	17.20
Bull...........A. Dodge & Sons Corp......	Beverly.........	29.42	27.20	6.80	6.30	13.01	17.20
Bull...........B. W. Brown Co...........	Concord.........	29.20	27.20	7.60	6.30	13.29	17.20
Bull...........W. K. Gilmore & Son.......	Franklin.........	32.93	27.20	7.37	6.30	11.00	17.20
Bull...........H. K. Webster Co..........	Lawrence........	26.71	27.20	7.53	6.30	14.95	17.20
Bull...........H. K. Webster Co..........	Lawrence......	27.23	27.20	6.28	6.30	14.79	17.20
Bull..........Berkshire Coal & Grain Co..	N. Adams.......	28.37	27.20	6.93	6.30	13.80	17.20
Haffenreffer & Co., Boston, Mass.							
Ropes Bros................	Salem...........	28.46	20.50	6.67	4.00	12.86	19.00
W. G. Horton..............	Ipswich.........	25.92	20.50	6.31	4.00	13.95	19.00
James Hanley Brewing Co., Providence, R. I.							
E. E. Cole.................	Billerca..........	24.17	20.00	6.48	6.00	16.83	18.00
Providence Brewing Co., Providence, R. I.							
Mansfield Milling Co....	Mansfield.......	27.67	25.00	6.41	5.00	14.27	15.00
Mansfield Milling Co.......	Mansfield.......	27.93	25.00	6.40	5.00	12.74	15.00
W. L. Palmer..............	Medway.........	27.58	25.00	4.94	5.00	13.58	15.00
W. L. Palmer..............	Medway.........	31.79	25.00	5.39	5.00	13.25	15.00
F. A. Fales & Co.........	Norwood........	25.66	25.00	5.82	5.00	13.20	15.00
I. J. Rowell.............	Pepperell........	29.86	25.00	5.12	5.00	12.03	15.00

RED DOG FLOUR.

Definition—Red Dog Flour is a low grade wheat flour containing the finer particles of bran.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.
William G. Crocker, Minneapolis, Minn.							
H. B[illegible]	S. Lawrence...	20.45	17.00	5.90	5.00	2.68	4.00
Hecker-Jones-Jewell Milling Co., Buffalo, N Y..							
I. J. [illegible]	Pepperell.	19.44	16.41	5.05	3.20	2.98	3.83
Northwestern Consl. Mlg. Co., Minneapolis, Minn.							
XXX Comet....C. S. Barber...............	Bernardston....	20.80	16.50	5.49	4.00	1.95	3.00
XXX Comet....Mansfield Milling Co.......	Mansfield......	20.21	16.50	5.60	4.00	2.95	3.00
XXX Comet....W. N. Potters Sons & Co....	Northampton....	19.66	16.50	5.90	4.00	2.38	3.00
Russell-Miller Milling Co., Minneapolis, Minn.							
Plummer & Jennings Gr. Co.	New Bedford....	17.78	16.00	3.33	4.50	2.16	6.00
Washburn, Crosby Co., Minneapolis, Minn.							
Adrian.........Paul Vigeant..............	Lowell........	19.44	17.00	5.37	5.00	3.90	4.00
Adrian.........Wilder & Wotton...........	Lowell..........	17.83	17.00	5.00	5.00	3.30	4.00

WHEAT MIDDLINGS.

Definition—Wheat Middlings consist of the finer portions of the wheat kernel as separated from it in the manufacture of flour. As there is no marked line of difference between flour and standard middlings both are placed under this heading.

Manufacturer or Jobber, Brand and Retailer	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Amendt Milling Co., Monroe, Mich.							
AMCO.........Rollstone Grain Co.........	Fitchburg........	16.90	15.00	5.26	5.00	4.58	4.30
AMCO.........Marlboro Grain Co.........	Marlboro........	17.25	15.00	4.91	5.00	4.82	4.30
AMCO.........I. J. Rowell...............	Pepperell........	16.90	15.00	5.07	5.00	4.43	4.30
Atlas Flour Mills, Milwaukee, Wis.							
* E. A. Cole.................	Housatonic . .	16.78	14.00	4.81	3.00	7.19	7.00
Baldwin Flour Mills, Minneapolis, Minn.							
*Flour.........A. E. Lawrence & Son.......	Ayer............	16.73	16.50	5.14	5.00	5.50	7.00
*Flour.........S. B. Green & Co..........	Watertown.......	18.39	16.50	5.18	5.00	5.25	7.00
Bay State Milling Co., Winona, Minn.							
*Winona.......J. A. Griffith...............	Gt. Barrington. .	18.13	17.00	5.61	5.00	6.61	8.00
Big Diamond Mills Co., Minneapolis, Minn.							
*Big Diamond Standard, W. B. Herrick.......	Beverly.....	17.86	14.67	5.76	4.21	7.65	9.35
A. H. Brown & Bros., Boston, Mass.							
Onward........Phillips Bates & Co.........	Hanover.....	17.95	17.00	5.90	5.00	7.83	8.00
Onward........C. G. Jordan..............	Weymouth......	18.21	17.00	5.60	5.00	6.40	8.00
Onward........C. G. Jordan..............	Weymouth......	17.86	17.00	5.35	5.00	6.89	8.00
Cataract City Milling Co., Niagara Falls, N. Y.							
*Standard......J. J. White................	Boston..........	18.13	15.57	5.45	5.45	8.74	—
Chas. M. Cox Co., Boston, Mass.							
Wirthmore..... Attleboro Grain Co.........	Attleboro........	18.21	15.00	5.33	4.00	5.31	7.00
Duluth Superior Milling Co., Duluth, Minn.							
Flour..........W. K. Gilmore & Sons, Inc..	Franklin........	18.48	17.50	5.12	5.00	5.80	7.00
Standard.......A. D. Potter...............	Orange..........	17.60	16.50	5.39	5.50	7.80	8.00
Everett-Aughenbaugh & Co., Waseca, Minn.							
*EACO.........M. H. Rolfe Est............	Newburyport.	18.48	15.00	5.83	3.00	7.50	10.00
Federal Milling Co., Lockport, N. Y.							
*Dairymaid.....F. B. French & Co..........	Sheffield.........	16.38	16.00	5.13	5.00	4.78	7.00
*Lucky........A. Culver Co..............	Rockland........	18.74	17.00	6.00	5.00	6.50	9.00
*Lucky........A. Milot & Son........	Taunton...	18.48	17.00	5.78	5.00	6.70	9.00
Globe Elevator Co., Buffalo, N. Y.							
Flour..........Knight Grain Co...........	Newburyport...	18.13	12.00	5.22	3.00	6.74	9.00
Wm. Hamilton & Son, Honeye Falls, N. Y.							
Warren Grain Co...........	Warren......	16.29	16.20	5.04	4.75	3.79	4.40
Hecker-Jones-Jewell Milling Co., Buffalo, N. Y.							
*Standard......Plummer & Jennings Gr. Co.	New Bedford....	18.30	17.40	5.29	6.08	7.50	7.62
*Standard......I. Morton & Co............	Plymouth.......	18.48	17.40	6.27	6.08	7.15	7.62
John Hoffer Flouring Mills Co., Steelton, Pa.							
J. Cushing & Co...........	Waltham.... ..	19.18	14.00	5.45	3.00	6.59	11.00
Hubbard Milling Co., Mankato, Minn.							
*Standard......C. L. Beals & Co...........	Winchendon....	18.39	14.50	5.65	5.10	7.80	10.00
Kehlor Flour Mills Co., St. Louis, Mo.							
*Rex...........A. Culver Co..............	Rockland........	18.30	16.00	4.73	4.00	7.15	7.00
*Rex...........Ropes Bros................	Salem............	19.18	16.00	4.74	4.00	5.90	7.00
*Rex...........H. G. Hill Co..............	Williamsburg....	18.65	16.00	4.62	4.00	6.00	7.00
National Feed Co., St. Louis, Mo.							
* Mackenzie & Winslow	Fall River.......	19.33	16.00	5.30	4.00	5.35	7.00
New Prague Flour Mill Co., New Prague, Minn.							
Seal of Minnesota ....H. H. Capen.........	Spencer.........	17.69	17.75	5.46	5.80	5.40	6.75

*With Screenings.

WHEAT MIDDLINGS.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Northwestern Consol. Mlg. Co., Minneapolis							
*Flour.........W. N. Potters Sons & Co....	Northampton....	17.78	15.50	5.67	4.50	5.95	6.00
Northwestern Milling Co., Little Falls, Minn.							
Fancy Country..Cummings, Chute & Co....	Woburn.........	17.16	15.00	5.33	4.80	7.83	10.60
Pillsbury Mills, Minneapolis, Minn.							
*A.............J. B. Bridges & Co.........	S. Deerfield......	18.74	15.00	4.88	4.50	5.18	7.00
*B.............Brookfield Grain Co........	Brookfield.......	16.03	15.00	5.18	4.50	9.63	10.00
*B.............Mackenzie & Winslow.......	Fall River.......	16.38	15.00	4.83	4.50	9.50	10.00
*B.............A. M. Haggart & Son.......	Franklin........	17.25	15.00	4.64	4.50	8.26	10.00
*B.............A. M. Haggart & Son.......	Franklin........	16.11	15.00	5.52	4.50	8.53	10.00
XX Daisy Flour W. J. Meek..............	Fall River.......	18.91	17.00	4.13	4.50	2.70	4.00
XX Daisy Flour F. O. Andrews............	Pepperell........	19.44	17.00	4.22	4.50	2.50	4.00
XX Daisy Flour Pittsfield Grain Co.......	Pittsfield......	18.30	17.00	4.38	4.50	2.89	4.00
Quaker City Mills Co., Philadelphia, Pa.							
E. C. Frost.........	Shelburne Falls..	16.73	14.00	4.42	4.00	4.08	5.50
Quaker Oats Co., Chicago, Ill.							
Bell Cow.......W. J. Meek. ...	Fall River.	18.19	--	4.67	---	3.64	
Queen Bee Flour Mills Co., Sioux Falls, S. Dak.							
*Queen Bee.....A. T. Butler...............	Adams......	15.85	17.20	4.35	4.30	6.15	9.40
*Queen Bee.....Hingham Grain Mill, Inc...	Hingham.	15.41	17.20	4.20	4.30	9.79	9.40
Red Wing Milling Co., Red Wing, Minn.							
Bixota.........M. G. Williams..........	Raynham. ...	18.83	18.30	4.85	5.70	6.74	7.50
Bixota.........Whitman Coal & Grain Co...	Whitman.. ..	18.83	18.30	5.50	5.70	6.68	7.50
Sleepy Eye Flour Mills Co., Minneapolis, Minn.							
*..............Eastern Grain Co..........	Bridgewater.	17.08	17.20	5.81	4.30	7.50	9.40
David Stott Flour Mills Co., Detroit, Mich.							
Pennant.........W. Lord...............	Athol.	17.60	17.00	5.09	5.00	6.70	7.00
Tennant & Hoyt Co. Lake City, Minn.							
*..............W. L. Palmer......	Medway.... ..	17.69	16.00	5.61	5.00	8.25	8.00
Thompson Milling Co., Lockport, N. Y.							
*Angelus Flour..Geo. F. Wetherbee Co......	Gardner...... ...	18.04	15.00	4.77	4.00	5.35	10.00
*Angelus Flour..J. W. Doon & Son..........	Natick.... ...	18.56	15.00	5.37	4.00	7.85	10.00
Valley City Milling Co., Grand Rapids, Mich.							
*Farmers Favorite..M. H. Rolfe Est.........	Newburyport....	13.98	15.00	4.50	4.25	4.11	5.90
Washburn Crosby Co., Minneapolis, Minn.							
*Flour.........H. C. Puffer Co............	Springfield.......	17.51	17.00	4.43	5.00	5.90	6.50
*Standard T. Steinhard.	Chester.........	17.51	15.00	4.90	5.00	7.94	8.00
*Standard......G. M. Foster Est...........	Lowell..........	17.21	15.00	5.42	5.00	9.50	8.00
*Standard......Plummer & Jennings Gr. Co	New Bedford....	18.19	15.00	5.33	5.00	6.20	8.00
Wisconsin Milling Co., Menomonie, Wis.							
G. M. Foster Est...........	Lowell..........	16.73	16.50	4.10	4.50	6.50	6.00

*With Screenings.

WHEAT MIXED FEEDS.

Definition—Wheat Mixed Feed is a mixture of the products other than the flour obtained from the milling of the wheat kernel.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Acme-Evans Co., Indianapolis, Ind.							
*Acme.........M. G. Williams	Raynham	16.61	16.50	4.27	4.00	8.61	9.00
Amendt Milling Co., Monroe, Mich.							
AMCO.........Marlboro Grain Co	Marlboro	16.81	15.00	5.37	4.00	8.33	8.00
AMCO.........C. L. Marsh	Webster	16.38	15.00	4.48	4.00	7.69	8.00
Baldwin Flour Mills, Minneapolis, Minn.							
*Hub..........J. W. Doon & Son	Natick	16.73	15.30	5.33	6.00	7.81	10.00
E. W. Bailey & Co., Montpelier, Vt.							
Fancy..........J. E. Merrick & Co.	Amherst	16.25	16.00	4.54	3.75	7.65	8.50
Blish Milling Co., Seymour, Ind.							
Bulls Eye......Knight Grain Co	Newburyport	15.76	16.00	4.62	4.40	9.35	9.10
Britton Milling Co., Britton, S. Dak.							
Favorite.......W. P. Barney	Seekonk	15.83	14.40	4.53	4.70	7.28	7.50
Wm. A. Coombs Milling Co., Coldwater, Mich.							
G. C. Nichols	Rehoboth	16.88	15.00	5.32	3.00	8.40	8.00
Chas. M. Cox Co., Boston, Mass.							
*Wirthmore.....J. H. Nye	Brockton	17.43	16.00	4.55	4.00	7.74	7.00
*Wirthmore.....Robinson & Jones Co	Natick	17.25	16.00	4.43	4.00	7.23	7.00
*Wirthmore.....E. C. Frost	Shelburne Falls	17.16	16.00	4.53	4.00	8.05	7.00
*Wirthmore.....A. J. Richards & Son	Weymouth	16.64	16.00	4.73	4.00	6.61	7.00
*Wirthmore.....C. G. Jordan	Weymouth	17.86	16.00	4.58	4.00	7.07	7.00
*Wirthmore.....Whitman Coal & Grain Co.	Whitman	17.08	16.00	4.67	4.00	7.10	7.00
J. G. Davis Co., Rochester, N. Y.							
Granite........C. L. Marsh	Webster	16.55	14.50	5.27	4.00	7.40	11.00
Duluth Superior Milling Co., Duluth, Minn.							
*Boston........F. F Woodward Co	Fitchburg	17.43	16.50	5.48	4.50	7.66	9.50
*Boston........Geo. F. Wetherbee Co	Gardner	16.11	16.50	6.00	4.50	7.15	9.50
*Boston........A. D. Potter	Orange	16.90	16.50	5.29	4.50	8.60	9.50
*Boston........H. C. Puffer Co	Springfield	16.46	16.50	6.13	4.50	8.05	9.50
Federal Milling Co., Lockport, N. Y.							
*Lucky.........M. Callahan Co.	Holyoke	17.95	15.00	5.14	4.00	8.69	10.00
*Lucky........Stanley Wood Grain Co.	Taunton	17.08	15.00	5.18	4.00	8.49	10.00
J. B. Garland & Son, Worcester, Mass.							
*Royal Worcester....Bond Grain Co	Charlton	16.99	16.00	4.41	4.50	7.05	7.00
*Royal Worcester....J. B. Garland & Son	Worcester	15.76	16.00	4.83	4.50	7.15	7.00
Garland Milling Co., Greensburg, Ind.							
*Garland.......Ropes Bros	Salem	17.08	15.25	4.66	3.75	7.90	9.00
Glen Mills Cereal Co., Rowley, Mass.							
Glen Mills Cereal Co	Rowley	14.63	15.00	4.13	4.00	9.71	7.00
Grafton Roller Mills Co., Grafton, N. Dak.							
Grafton........J. H. Nye	Brockton	17.43	15.10	5.32	4.50	7.15	9.30
Grafton........G. F. Greene Coal Co	Campello	17.43	15.10	4.73	4.50	6.79	9.30
Grafton........Horvitz Grain Co	New Bedford	16.03	15.10	4.64	4.50	7.69	9.30
Grafton........Sparrow & Co	Northboro	16.64	15.10	4.71	4.50	7.80	9.30
Grafton........A. Culver Co	Rockland	16.29	15.10	4.87	4.50	7.80	9.30
Hecker-Jones-Jewell Milling Co., Buffalo, N. Y.							
*..............Geo. F. Wetherbee Co	Gardner	18.30	14.64	5.71	5.36	7.23	8.83
*..............Paul Vigeant	Lowell	17.08	14.64	5.00	5.36	8.00	8.83
*..............I. J. Rowell	Pepperell	18.13	14.64	5.19	5.36	7.00	8.83

*With Screenings.

WHEAT MIXED FEEDS.—*(Continued)*

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
Hunter-Robinson-Wenz Milling Co., Philadelphia, Pa.		%	%	%	%	%	%
Certified.......G. H. Parker	Danversport	18.13	15.50	4.88	4.00	7.66	10.00
Certified.......Wild & Beck	Southbridge	17.69	15.50	4.18	4.00	8.33	10.00
Kehlors Flour Mill Co., St. Louis, Mo.							
Kehlors........Ropes Bros	Danvers	18.21	15.00	4.62	4.00	7.98	8.00
Kehlors........J. P. Thacher	Littleton	17.86	15.00	4.52	4.00	7.00	8.00
Kehlors........Thorne Bros	Millis	16.73	15.00	4.73	4.00	7.70	8.00
Kehlors........C. B. Sawin & Son	Southboro	18.04	15.00	4.56	4.00	7.88	8.00
Kehlors........F. Diehl	Wellesley	16.90	15.00	4.73	4.00	8.36	8.00
Kemper Mill & Elevator Co., Kansas City, Mo.							
*Crescent......F. A. Fales & Co	Norwood	17.78	16.00	4.05	4.00	7.70	10.00
Lawrenceburg Roller Mills Co., Lawrenceburg, Ind.							
*Snowflake.....W. J. Meek	Fall River	17.08	15.20	4.09	4.30	7.40	8.00
*Snowflake.....Geo. F. Wetherbee Co	Gardner	17.16	15.20	4.29	4.30	7.20	8.00
*Snowflake.....Phillips Bates Co	Hanover	16.90	15.20	4.07	4.30	7.50	8.00
*Snowflake.....Stanley Wood Grain Co	Taunton	17.43	15.20	3.95	4.30	8.45	8.00
*Snowflake.....L. H. Kirk	Wakefield	17.25	15.20	4.51	4.30	7.50	8.00
Northwestern Consol. Mlg. Co., Minneapolis, Minn.							
Planet.........C. S. Barber	Bernardston	18.48	15.00	5.30	4.00	6.18	8.00
Planet.........H. R. Lamb	Brookfield	19.53	15.00	5.46	4.00	5.93	8.00
Planet.........Bond Grain Co	Charlton	15.33	15.00	4.57	4.00	6.20	8.00
Planet.........W. N. Potters Sons & Co	Greenfield	19.35	15.00	5.48	4.00	5.83	8.00
Planet.........C. P. Washburn	Middleboro	18.39	15.00	5.50	4.00	6.50	8.00
Planet.........C. P. Washburn	Middleboro	18.48	15.00	5.62	4.00	5.11	8.00
Planet.........W. N. Potter Grain Co	Princeton	18.21	15.00	5.18	4.00	6.00	8.00
Planet.........W. N. Potter Grain Co	Princeton	17.16	15.00	5.02	4.00	7.20	8.00
A. F. Sanctuary	Amherst	16.90	15.00	5.27	4.50	7.98	10.00
Pillsbury Flour Mills Co., Minneapolis, Minn.							
*Fancy.........Brookfield Grain Co	Brookfield	18.21	16.00	4.79	4.50	7.00	9.00
*Fancy.........C. F. Pease	Chester	16.55	16.00	4.55	4.50	6.89	9.00
*Fancy.........C. A. Pierce	Hinsdale	19.00	16.00	4.72	4.50	6.43	9.00
*Fancy.........Bryant & Soule	Middleboro	17.16	16.00	4.67	4.50	7.39	9.00
*Fancy.........Bryant & Soule	Middleboro	17.86	16.00	4.82	4.50	7.25	9.00
*Fancy.........Guay Bros	New Bedford	17.14	16.00	4.75	4.50	5.80	9.00
*Fancy.........I. J. Rowell	Pepperell	18.13	16.00	4.72	4.50	7.08	9.00
*Fancy.........J. B. Garland & Son	Worcester	16.64	16.00	4.75	4.50	7.73	9.00
Russell-Miller Milling Co., Minneapolis, Minn.							
Occident.......A. E. Lawrence & Son	Ayer	17.95	15.00	5.15	4.50	6.85	10.00
Occident.......A. Dodge & Sons Corp	Beverly	18.39	15.00	5.21	4.50	7.24	10.00
Occident.......W. E. Bryant & Co	Brockton	18.21	15.00	5.30	4.50	8.24	10.00
Occident.......C. F. Pease	Chester	18.04	15.00	4.91	4.50	7.36	10.00
Occident.......Mackenzie & Winslow	Fall River	17.34	15.00	5.47	4.50	7.52	10.00
Occident.......M. H. Rolfe Est	Newburyport	17.34	15.00	5.18	4.50	7.89	10.00
Occident.......H. C. Puffer Co	Springfield	17.25	15.00	5.57	4.50	8.03	10.00
Sheffield-King Milling Co., Minneapolis, Minn.							
*Gold Mine.....Scott Grain Co	Amesbury	16.81	15.90	7.00	4.90	7.95	8.98
*Gold Mine.....Bond Grain Co	Charlton	16.11	15.90	4.83	4.90	8.50	8.98
*Gold Mine.....G. M. Foster Est	Lowell	16.73	15.90	5.22	4.90	7.60	8.98
*Gold Mine.....C. P. Washburn	Middleboro	16.55	15.90	5.33	4.90	7.68	8.98
*Gold Mine.....N. Hatfield Grain Co	N. Hatfield	18.74	15.90	4.74	4.90	7.70	8.98
*Gold Mine.....E. C. Frost	Shelburne Falls	17.51	15.90	4.98	4.90	8.00	8.98
*Gold Mine.....J. S. Nason & Co	Westboro	17.08	15.90	4.66	4.90	8.30	8.98
Sparks Milling Co., Alton, Ill.							
*Try Me.......John Shine	Dedham	19.26	16.00	4.20	3.50	8.08	8.00
*Try Me.......E. J. Adams	Gt. Barrington	20.05	16.00	4.25	3.50	7.38	8.00
*Try Me.......Wilder & Wotton	Lowell	18.65	16.00	4.30	3.50	7.84	8.00
*Try Me.......M. G. Williams	Raynham	18.13	16.00	4.83	3.50	7.76	8.00
*Try Me.......C. B. Sawin & Son	Southboro	18.39	16.00	4.43	3.50	7.69	8.00

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*With Screenings.

WHEAT MIXED FEED.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein. Found	Protein. Guar.	Fat. Found	Fat. Guar.	Fiber. Found	Fiber. Guar
		%	%	%	%	%	%
Sparks Milling Co., Terre Haute, Ind.							
*Wabash.......W. E. Bryant & Co.	Brockton	17.08	14.00	4.62	3.50	8.25	11.00
*Wabash.......C. T. Wyman	Hubbardston	16.20	14.00	4.33	3.50	7.83	11.00
David Stott Flour Mills Co., Detroit, Mich.							
Honest.........W. Lord	Athol	16.99	16.50	4.73	5.00	7.52	8.00
Honest.........C. B. Sampson	Holyoke	17.60	16.50	4.43	5.00	6.65	8.00
Stratton & Co., Concord, N. H.							
F. O. Andrews	Pepperell	18.30	14.00	4.27	4.00	8.25	9.00
F. O. Andrews	Pepperell	16.11	14.00	4.74	4.00	7.63	9.00
Thompson Milling Co., Lockport, N. Y.							
*Angelus.......Geo. F. Wetherbee Co.	Gardner	17.78	15.00	4.78	4.00	6.89	10.00
*Angelus.......J. W. Doon & Son	Natick	17.51	15.00	4.80	4.00	8.11	10.00
Thornton & Chester Milling Co., Buffalo, N. Y.							
*T. & C.........J. N. Waite	Easthampton	16.73	15.00	5.68	4.50	4.21	9.00
*T. & C.........W. N. Potter Sons & Co	Northampton	17.43	15.00	5.33	4.50	9.10	9.00
*T. & C.........W. N. Potter Grain Co.	Princeton	16.90	15.00	5.24	4.50	8.76	9.00
*T. & C.........W. N. Potter Grain Co.	Princeton	17.43	15.00	5.51	4.50	8.51	9.00
*T. & C.........Potter Grain Co.	Shelburne Falls	17.08	15.00	5.45	4.50	9.63	9.00
C. W. Wagar & Co., Philadelphia, Pa.							
*Middlesex.....Mackenzie & Winslow	Fall River	16.64	15.00	5.26	4.00	7.68	10.00
Waggoner Gates Milling Co., Independence, Mo.							
Eastern Grain Co.	Bridgewater	18.65	15.00	4.81	3.00	7.40	9.00
Eastern Grain Co.	Bridgewater	18.21	15.00	4.83	3.00	6.95	9.00
John Shea	Lawrence	17.16	15.00	4.67	3.00	7.29	9.00
J. B. Bridges & Co.	S. Deerfield	18.21	15.00	4.75	3.00	7.59	9.00
A. Milot & Son	Taunton	18.56	15.00	4.29	3.00	7.10	9.00
A. Milot & Son	Taunton	17.49	15.00	4.87	3.00	7.66	9.00
H. G. Hill Co.	Williamsburg	18.65	15.00	5.13	3.00	8.25	9.00
Washburn-Crosby Co., Minneapolis, Minn.							
*..............T. H. Emerson	E. Weymouth	17.25	16.00	5.14	4.50	7.20	9.00
Webster Mill Co., Webster, So. Dak.							
Webster........F. Diehl	Wellesley	15.94	15.30	5.67	4.80	8.43	10.40
Williams Bros. Co., Kent, Ohio.							
Kent...........Attleboro Grain Co.	Attleboro	15.50	12.00	4.71	2.00	6.40	15.00
Kent...........Plummer & Jennings Gr. Co.	New Bedford	16.20	12.00	4.03	2.00	6.85	15.00
Kent...........S. L. Davenport & Son	N. Grafton	15.46	12.00	4.27	2.00	6.37	15.00
Kent...........W. P. Barney	Seekonk	15.30	12.00	4.53	2.00	6.55	15.00
Kent...........A. N. Whittemore & Co.	Worcester	15.85	12.00	4.27	2.00	6.50	15.00

WHEAT BRAN.

Definition—Wheat Bran is the coarse outer coating of the wheat kernel.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein. Found	Protein. Guar.	Fat. Found	Fat. Guar.	Fiber. Found	Fiber. Guar
Baldwin Flour Mills, Minneapolis, Minn.							
*...............Mackenzie & Winslow	Fall River	14.28	14.50	5.41	4.00	10.24	12.00
Banner Milling Co., Buffalo, N. Y.							
*Banner........J. Cushing & Co.	Hudson	16.69	15.00	5.18	4.25	9.89	9.75
Big Diamond Mills Co., Minneapolis, Minn.							
*Big Diamond ..Pittsfield Grain Co.	Pittsfield	15.06	14.00	4.80	4.00	10.14	11.07
Blake Milling Co., Edwardsville, Ill.							
*..............Ropes Bros.	Salem	17.25	15.50	4.31	4.00	8.57	11.00
*..............C. B. Sawin & Son	Southboro	19.18	15.50	2.77	4.00	9.89	11.00

*With Screenings.

WHEAT BRAN.—(*Continued*)

Manufacturer, Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
A. H. Brown & Bros., Boston, Mass.							
Onward........C. G. Jordan	Weymouth	15.85	15.00	5.12	5.00	11.13	11.00
L. G. Campbell Milling Co., Onatonna, Minn.							
C. T. Wyman	Hubbardston	17.08	13.40	5.00	4.50	9.11	12.00
Cataract City Milling Co., Niagara, Falls N. Y.							
*..............J. J. White	Boston	16.64	13.80	4.89	4.00	9.08	--
Geo. C. Christian & Co., Minneapolis, Minn.							
*Jersey.........E. A. Cole	Housatonic	14.10	13.00	4.88	4.00	10.96	12.00
*Jersey.........J. W. Doon & Sons	Natick	15.41	13.00	4.61	4.00	10.76	12.00
Chas. M. Cox Co., Boston, Mass.							
Argentine......Cunningham Grain Co	Malden	16.64	16.00	3.99	4.00	10.00	12.00
*Monogram.....A. E. Lawrence & Son	Ayer	16.03	15.00	4.82	4.00	10.75	10.00
*Monogram.....G. F. Green Coal Co	Campello	16.90	15.00	5.20	4.00	11.10	10.00
Duluth Superior Milling Co. Duluth, Minn.							
*Duluth Imperial, A. D. Potter	Orange	16.20	14.00	4.98	4.00	9.58	11.25
Everett Anghenbaugh & Co., Waseca, Minn.							
*EACO.........J. Cushing & Co	Fitchburg	16.11	14.00	5.17	3.00	9.90	12.00
*EACO.........M. H. Rolfe Est	Newburyport	16.03	14.00	4.70	3.00	9.60	12.00
Federal Milling Co., Lockport, N. Y.							
*Lucky.........M. Callahan Co	Holyoke	17.86	15.00	5.15	4.50	11.00	11.00
*Lucky.........Stanley Wood Grain Co	Taunton	16.55	15.00	4.85	4.50	9.58	11.00
Grafton Roller Mill Co., Grafton, N. Dak.							
J. H. Nye	Brockton	16.73	15.80	5.27	4.00	9.33	11.90
Hecker-Jones-Jewell Milling Co., Buffalo, N. Y.							
*..............Rollstone Grain Co	Fitchburg	16.20	15.75	4.56	3.95	9.48	10.36
Hezel Milling Co., East St. Louis, Ill.							
John S. Wolfe Co	Pittsfield	15.06	14.30	4.27	3.55	9.01	9.00
John Hoffer Flouring Mill Co. Steelton, Pa.							
C. P. Washburn	Middleboro	15.50	14.00	4.33	4.00	8.89	11.00
J. Cushing & Co	Fitchburg	15.33	14.00	4.12	4.00	7.50	11.00
Hunter-Robinson-Wenz MillingCo.,St. Louis,Mo.							
C. P. Washburn	Middleboro	18.21	15.50	4.63	4.00	9.15	11.00
Ismert-Hincke Milling Co., Kansas City, Mo.							
Eastern Grain Co	Bridgewater	17.34	14.50	4.44	4.35	9.09	13.50
Kehlor Flour Mills Co., St. Louis, Mo.							
Palace.........Thorne Bros	Millis	16.64	14.50	4.81	4.00	8.00	10.00
Palace.........W. P. Grif[illegible]	Pittsfield	17.95	14.50	4.32	4.00	8.62	10.00
Kemper Mill & Elev. Co., Kansas City, Mo.							
Anchor.........Cunningham Grain Co	Malden	17.69	14.50	4.41	4.00	10.10	10.00
Diamond.......Bond Grain Co	Charlton	16.90	14.50	4.41	4.00	8.79	9.50
Lake of the Woods Milling Co., Keewatin, Can.							
*..............Mackenzie & Winslow	Fall River	16.20	14.00	4.94	3.00	8.78	10.00
*..............Weld & Beck	Southbridge	16.46	14.00	5.03	3.00	9.11	10.00
Larabee Flour Mills Co., Stafford, Kansas							
*..............W. L. Palmer	Medway	17.08	14.50	4.53	3.50	10.10	10.00
Larabee Flour Mills Co., Hutchinson, Kans.							
*..............W. L. Palmer	Medway	17.34	14.50	4.24	3.50	8.94	10.00

*With Screenings.

WHEAT BRAN.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Lawrenceburg Roller Mills Co., Lawrenceburg, Ind.							
Snowflake......Plummer & Jennings Gr. Co.	New Bedford.	15.59	14.20	3.49	3.80	9.22	9.50
Leavenworth Milling Co., Leavenworth, Kansas							
F. Diehl & Son............	Wellesley.....	16.20	14.00	3.95	3.60	10.33	10.00
Maney Milling Co., Omaha, Neb.							
*.............H. C. Puffer Co............	Springfield....	15.68	14.00	4.54	4.25	9.08	10.50
Maple Leaf Milling Co., Toronto, Canada							
E. C. Packard.............	Brockton.....	16.11	15.50	5.78	4.50	10.68	12.00
Melrose Milling Co., Melrose, Minn.							
J. B. Garland & Son........	Worcester....	14.63	14.00	4.73	3.00	10.56	11.00
Miner-Hillard Milling Co., Wilkes Barre, Pa.							
Brockleman Bros...........	Clinton......	16.64	17.00	4.70	4.00	10.33	10.00
Moses Bros. Milling Co., Great Bend, Kansas.							
N. Attleboro Grain Co......	N. Attleboro.	17.25	14.00	4.20	3.09	9.64	14.50
Niagara Falls Milling Co., Niagara Falls, N. Y.							
G. M. Foster Est...........	Lowell......	16.99	14.00	5.01	3.00	9.10	12.00
C. L. Beals & Co...........	Winchendon.	16.38	14.00	5.25	3.00	8.99	12.00
Northwestern Consol. Mfg. Co., Minneapolis, Minn.							
C. S. Barber...............	Bernardston.	16.81	14.50	4.94	4.00	9.49	11.00
H. R. Lamb...............	Brookfield...	17.08	14.50	4.88	4.00	9.50	11.00
A. Milot & Son............	Taunton....	17.16	14.50	4.48	4.00	8.53	11.00
Ogilvie Flour Mills Co., Canada							
*.............F. H. Crane & Son.........	Quincy Adams	14.89	15.00	5.20	4.00	10.40	10.00
Osakis Milling Co., Osakis, Minn.							
Osakis.........H. C. Puffer Co...........	Springfield....	14.89	15.00	4.95	4.00	10.14	14.00
Pillsbury Flour Mills Co., Minneapolis, Minn.							
*.............Bryant & Soule............	Middleboro..	15.59	14.50	5.14	4.00	10.73	12.00
Geo. P. Plant Milling Co., St. Louis, Mo.							
Wilder & Wotton...........	Lowell......	17.51	15.00	3.95	3.00	9.40	11.00
Quaker City Flour Mills Co., Philadelphia, Pa.							
Hingham Grain Mill Inc.........	Hingham...	14.89	13.00	4.41	3.00	7.55	10.50
Quaker Oats Co., Chicago, Ill.							
Bell Cow.......Knight Grain Co...........	Newburyport.	15.94	14.50	5.84	5.50	9.09	7.60
Bell Cow.......A. N. Whittemore & Co.....	Worcester...	15.41	14.50	5.24	5.50	8.58	7.60
Queen Bee Flour Mills Co., Sioux Falls, S. D.							
*Queen Bee.....Hingham Grain Mill, Inc....	Hingham..	15.33	15.00	4.58	4.40	10.05	13.30
*Queen Bee.....M. G. Williams............	Raynham..	14.95	15.00	5.07	4.40	10.75	13.30
Red Wing Milling Co., Red Wing, Minn.							
*Bixota........M. G. Williams...........	Raynham...	15.33	14.10	4.67	4.10	10.19	12.70
Robin Hood Mills Co., Canada							
Robin Hood....M. G. Williams............	Raynham..	16.64	16.25	5.65	5.20	9.69	9.80
Russell-Miller Milling Co., Minneapolis, Minn.							
Hingham Grain Mill, Inc....	Hingham...	17.16	13.00	5.26	4.00	9.46	11.00
St. Marys Mill Co., St. Mary's, Mo.							
W. G. Horton.............	Ipswich....	16.38	15.06	3.52	3.50	10.36	9.00

***With Screenings.**

WHEAT BRAN.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar
		%	%	%	%	%	%
Southwestern Milling Co., Kansas City, Mo.							
*..............J. Cushing Co.	Waltham	15.76	16.16	3.04	3.58	9.03	10.22
Stanard-Tilton Milling Co., St. Louis, Mo.							
*..............J. H. Nye	Brockton	18.48	14.50	4.63	4.00	9.00	9.50
David Stott Flour Mills Co., Detroit, Mich.							
*..............M. J. Cahill & Co	Everett	16.38	16.00	3.91	4.00	9.40	10.00
Tennant & Hoyt Co., Lake City, Minn.							
*..............Plummer & Jennings Gr. Co.	New Bedford	16.20	14.00	4.53	4.00	9.44	11.00
Thompson Milling Co., Lockport, N. Y.							
*Angelus.......J. W. Doon & Son	Natick	15.68	15.00	5.27	4.00	11.95	10.00
*Angelus.......E. C. Frost	Shelburne Falls	14.28	15.00	4.00	4.00	9.70	10.00
George Urban Milling Co., Buffalo, N. Y.							
*..............J. B. Garland & Son	Worcester	16.69	15.00	5.07	4.00	9.94	12.50
Valley City Milling Co., Grand Rapids, Mich.							
*Farmers Favorite.....M. H. Rolfe Est.	Newburyport	17.25	15.90	4.78	3.50	8.30	9.80
Washburn & Crosby Co., Minneapolis, Minn.							
*..............W. Lord	Athol	16.03	14.50	4.80	4.00	11.19	12.00
*..............C. Parkinson	Seekonk	15.24	14.50	4.88	4.00	10.60	12.00
Wells Flour Milling Co., Wells, Minn.							
Feedwell.......Stanley Wood Grain Co.	Taunton	16.70	14.00	4.33	4.75	9.29	11.00
Western Flour Mills Co., Davenport, Iowa.							
Black Hawk....H. K. Webster Co.	Lawrence	16.46	14.60	4.54	4.75	10.49	11.00
Western Star Mill Co., Salina, Kansas.							
*Star..........Pierce & Winn	Arlington	15.80	15.00	4.45	3.50	8.85	10.00
Whitewater Milling & Elev. Co., Whitewater, Kansas.							
H. C. Bowen & Son	Cheshire	18.65	14.00	4.80	4.00	9.24	10.00

RYE FEEDS.

Definition—Rye Feeds are by-products obtained in the manufacture of flour from rye.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar
Barber & Bennett, Albany, N. Y.							
*..............John S. Wolfe Co	Pittsfield	14.54	13.75	3.26	3.00	4.53	6.50
Boutwell Milling & Grain Co., Troy. N. Y.							
*..............M. E. Ballou & Son	Becket	14.71	13.50	3.10	3.00	3.73	6.00
*..............C. G. Burnham	Holyoke	15.33	13.50	3.21	3.00	4.10	6.00
*..............Pittsfield Grain Co	Pittsfield	14.28	13.50	2.92	3.00	3.60	6.00
*..............H. C. Puffer Co	Springfield	14.89	13.50	3.47	3.00	3.88	6.00
*..............H. G. Hill Co.	Williamsburg	15.15	13.50	3.23	3.00	3.42	6.00
*..............J. B. Garland & Son	Worcester	15.06	13.50	3.15	3.00	4.35	6.00
Eagle Roller Mills Co., New Ulm, Minn.							
O. H. Fiske	Huntington	17.51	17.40	3.29	3.77	5.09	5.97
Miner-Hillard Milling Co., Wilkes Barre, Pa.							
Brockleman Bros.	Clinton	14.98	15.00	3.12	2.00	3.76	5.00
Union Coal, Ice & Gr. Co.	S. Lancaster	14.89	15.00	3.13	2.00	3.93	5.00

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*With Screenings.

WHEAT FEEDS WITH ADMIXTURES.—(Wheat and Rye.)

Manufacturer or Jobber, Brand and Retailer.		Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
			Found	Guar.	Found	Guar.	Found	Guar.	
			%	%	%	%	%	%	
Quaker Oats Co. Chicago, Ill.									
Buckeye	Mackenzie & Winslow	Fall River	17.34	15.50	4.59	4.50	8.06	8.50	Mixed wheat feed and rye shorts.
Buckeye	H. K. Webster Co.	Lawrence	17.34	15.50	5.09	4.50	7.50	8.50	
Buckeye	H. K. Webster Co.	Lawrence	16.03	15.50	4.31	4.40	6.87	8.50	
Buckeye	Conant & Co.	Littleton	17.34	15.50	4.57	4.50	7.49	8.50	
Buckeye	Stanley Wood Grain Co.	Taunton	17.16	15.50	5.50	4.50	8.12	8.50	
Buckeye	C. L. Marsh	Webster	17.69	15.50	4.48	4.50	7.70	8.50	

WHEAT FEEDS WITH ADMIXTURES. (Low Grade.)

Manufacturer or Jobber, Brand and Retailer.		Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.	Certified Ingredients.
Indiana Milling Co., Terre Haute, Ind.									
Holstein	Guay Bros.	New Bedford	12.17	12.00	4.19	3.00	14.00	16.00	Cob meal, wheat bran containing mill run ground screenings.
Holstein	Warren Grain Co.	Warren	9.72	12.00	2.96	3.00	20.30	16.00	
Sterling	Mackenzie & Winslow	Fall River	10.51	10.00	3.00	3.00	15.90	16.00	Wheat bran containing mill run ground screenings, corn meal, cob meal.
Sterling	W. J. Meek	Fall River	9.28	10.00	3.63	3.00	15.52	16.00	
A. Waller & Co., Henderson, Ky.									
Blue Grass	W. B. Herrick	Beverly	10.42	9.00	2.69	2.00	17.20	17.00	Wheat bran, wheat middlings, ground corn and cob.
Blue Grass	W. B. Herrick	Beverly	9.28	9.00	2.43	2.00	17.35	17.00	
Blue Grass	Ropes Bros.	Danvers	9.63	9.00	2.90	2.00	15.93	17.00	
Blue Grass	Curley Bros.	Wakefield	10.33	9.00	2.54	2.00	15.51	17.00	

DAIRY AND HORSE FEEDS. (Containing More Than 15% Protein.)

Manufacturer or Jobber, Brand and Retailer.		Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.	Certified Ingredients.
J. Bibby & Sons, Liverpool, England									Decorticated and undecorticated cottonseed cake, wheat middlings, corn, peanut cake, rice polish, rape cake, locust beans.
Dairy	J. Loring & Co.	Watertown	22.51	18.00	6.98	6.00	10.76	11.00	
Horse	W. B. Herrick	Beverly	21.80	18.00	7.10	6.00	10.88	11.00	Cottonseed cake, linseed cake, middlings, corn, peanut cake, rice polish, rape cake, molasses, soy bean cake, locust beans, fenugreek, salt.
Horse	J. H. Nye	Brockton	20.66	18.00	6.95	6.00	11.50	11.00	
Horse	J. Loring & Co.	Watertown	20.66	18.00	7.24	6.00	10.23	11.00	
Buffalo Cereal Co., Buffalo, N. Y.									
Creamery	J. H. Nye	Brockton	20.93	18.00	5.33	4.00	11.29	9.00	Corn, wheat bran and middlings, hominy feed, corn gluten feed, cottonseed meal, oat shorts, oat middlings and oat hulls.
Creamery	J. H. Nye	Brockton	20.05	18.00	5.75	4.00	10.14	9.00	
Creamery	A. Culver Co.	Rockland	20.40	18.00	5.67	4.00	11.63	9.00	

DAIRY AND HORSE FEEDS. (Containing More Than 15% Protein.)—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at.	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Chapin & Co., Hammond, Ind.								
Unicorn........C. S. Barber...............	Bernardston....	27.23	26.00	4.82	5.50	10.75	10.00	Corn distillers' grains, cottonseed meal, linseed meal, hominy meal, malt sprouts, gluten feed, cornstarch by-products with corn bran, barley feed, brewers' grains, pure wheat bran.
Unicorn........W. E. Bryant & Co.........	Brockton........	25.48	26.00	5.63	5.50	11.25	10.00	
Unicorn........W. N. Potter Sons & Co.....	Northampton...	28.19	26.00	5.33	5.50	9.77	10.00	
Unicorn........F. A. Fales & Co............	Norwood........	27.49	26.00	6.07	5.50	10.78	10.00	
Unicorn........W. N. Potter Grain Co.....	Princeton.......	26.97	26.00	5.52	5.50	10.09	10.00	
Unicorn........W. N. Potter Grain Co.....	Princeton.......	27.32	26.00	6.31	5.50	9.08	10.00	
Unicorn........Cutler Co.................	W. Brookfield....	27.58	26.00	5.65	5.50	10.12	10.00	
Unicorn........A. J. Richards & Son.......	Weymouth......	25.66	26.00	5.97	5.50	11.65	10.00	
Unicorn........A. J. Richards & Son.......	Weymouth......	26.17	26.00	8.06	5.50	10.50	10.00	
Chas. M. Cox Co., Boston, Mass.								
Wirthmore.....J. E. Merrick & Co.........	Amherst........	28.89	25.50	5.34	6.50	8.72	8.50	Cottonseed meal, linseed meal, gluten feed, distillers' grains, bran, malt sprouts, hominy or corn meal, salt.
Wirthmore.....Eastern Grain Co..........	Bridgewater....	26.44	25.50	4.94	6.50	8.99	8.50	
Wirthmore.....J. H. Nye................	Brockton........	28.89	25.50	4.74	6.50	9.30	8.50	
Wirthmore.....A. Culver Co..............	Rockland........	27.32	25.50	5.87	6.50	9.50	8.50	
E. Crosby & Co., Brattleboro, Vt.								
Ready Ration...A. F. Sanctuary............	Amherst.........	26.44	25.00	6.78	7.00	9.46	9.00	Distillers' grains, cottonseed meal, linseed meal, malt sprouts, wheat bran and middlings, hominy feed, salt.
Ready Ration...N. Hatfield Grain Co.......	N. Hatfield......	27.06	25.00	6.01	7.00	8.91	9.00	
Dewey Bros. Co., Blanchester, Ohio								
Ready Ration...G. M. Foster Est...	Lowell.... ...	26.44	25.00	6.95	7.00	10.65	9.00	Distillers' grains, O. P. oil meal, cottonseed meal, malt sprouts, wheat bran and middlings, hominy feed, salt.
Larrowe Milling Co., Detroit, Mich.								
Larro..........Attleboro Grain Co.	Attleboro... ...	21.10	19.00	3.96	3.00	10.98	14.00	Cottonseed meal, corn gluten feed, distillers' dried grains, bran, middlings, dried beet pulp, salt.
Larro..........G. W. King........	Charlton........	21.19	19.00	4.74	3.00	11.30	14.00	
Larro..........J. H. Griffith..............	Gt. Barrington..	22.42	19.00	4.47	3.00	10.66	14.00	
Larro..........Mansfield Milling Co.......	Mansfield.......	21.28	19.00	3.31	3.00	10.28	14.00	
Larro..........Guay Bros................	New Bedford....	21.71	19.00	3.93	3.00	10.40	14.00	
Larro..........H. P. Howland............	Spencer.........	19.44	19.00	4.28	3.00	12.76	14.00	
Larro..........Taunton Grain Co..........	Taunton........	20.75	19.00	3.49	3.00	11.65	14.00	
Larro..........J. B. Garland & Son........	Worcester......	21.10	19.00	4.02	3.00	12.00	14.00	Dried beet pulp, cottonseed meal, malt sprouts corn gluten feed, linseed oil meal, wheat bran, dried distillers' grains, salt.
Mingo.........Robinson & Jones...	Natick..........	26.44	25.00	4.04	4.00	12.50	12.00	
Ropes Bros., Salem, Mass.								
Horse..........Ropes Bros.	Danvers... ..	16.73	13.00	4.95	5.00	10.61	9.50	Hominy meal, crushed oats, oil meal, wheat mixed feed, gluten feed, alfalfa meal.
Horse..........Ropes Bros................	Salem...........	16.38	13.00	4.99	5.00	9.50	9.50	

DAIRY AND HORSE FEEDS—(Containing More Than 15% protein)—*Continued.*

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Ubiko Milling Co., Cincinnati, Ohio								
Union Grains...J. O. Ellison & Co.	Haverhill	25.48	24.00	5.33	7.00	10.05	9.00	Distillers' dried grains,* cottonseed meal, old process linseed meal, wheat middlings, wheat bran, hominy meal, barley, malt sprouts, salt.
Union Grains...Mansfield Milling Co.	Mansfield	24.26	24.00	6.10	7.00	9.15	9.00	
Union Grains...Bryant & Soule	Middleboro.	24.52	24.00	5.90	7.00	9.60	9.00	
Union Grains...Pittsfield Grain Co.	Pittsfield	25.31	24.00	5.57	7.00	9.75	9.00	
Union Grains...Whitman Coal & Grain Co.	Whitman	24.43	24.00	5.33	7.00	9.08	9.00	
Union Grains...Whitman Coal & Grain Co.	Whitman	24.52	24.00	5.84	7.00	10.25	9.00	
Union Grains...P. W. Eaton & Co.	Williamstown	25.22	24.00	5.30	7.00	4.60	9.00	
Union Grains...J. Cushing & Co.	Winchendon	25.22	24.00	6.12	7.00	9.48	9.00	
A. H. Wood & Co., Framingham, Mass.								
Dairy Blend....A. H. Wood & Go.	Framingham	24.61	22.00	6.92	6.00	9.83	10.00	Corn meal, wheat feed, gluten feed, alfalfa meal, driedbeet pulp, ground oats, cottonseed meal, oil meal, salt

MOLASSES FEEDS. (Containing More Than 15% Protein.)

Definition—Molasses feeds are mixtures of molasses and various other feeding stuffs to which is usually added some low grade milling offal such as oat hulls, clipped oat by-product or screenings.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.	Certified Ingredients.
American Milling Co., Peoria, Ill.								
Sucrene Dairy...G. M. Foster Est.	Lowell	16.04	16.50	4.75	3.50	11.05	12.50	Molasses, cottonseed meal, corn gluten feed, ground and bolted grain screenings, clipped oat by-product, linseed meal, salt.
Sucrene Dairy...Plummer & Jennings Gr. Co.	New Bedford	15.71	16.50	5.05	3.50	12.17	12.50	
Sucrene Dairy...Plummer & Jennings Gr. Co.	New Bedford	17.14	16.50	4.45	3.50	10.90	12.50	
Sucrene Dairy...Sprague & Williams	S. Framingham	15.71	16.50	5.81	3.50	11.88	12.50	
Cloverleaf Milling Co., Buffalo, N. Y.								
Cloverleaf Dairy...A. F. Sanctuary	Amherst	19.05	16.50	4.28	3.50	13.66	12.00	Cottonseed meal, corn gluten feed, mixed broken grains consisting of wheat, corn, barley, flax, speltz, ground grain screenings, clipped oat by-product, molasses, salt.
Cloverleaf Dairy...J. N. Waite	Easthampton	17.73	16.50	3.37	3.50	13.84	12.00	
Cloverleaf Dairy...Lenox Coal Co.	Lenoxdale	15.67	16.50	3.38	3.50	11.40	12.00	
Cloverleaf Dairy...J. B. Bridges & Co.	S. Deerfield	16.05	16.50	3.71	3.50	12.83	12.00	
Cloverleaf Dairy...J. B. Bridges & Co.	S. Deerfield	15.36	16.50	3.67	3.50	12.55	12.00	
Cloverleaf Dairy...C. B. Sawin & Son	Southboro	17.13	16.50	3.93	3.50	12.50	12.00	
Cloverleaf Dairy...**Cutler** Grain Co.	S. Framingham	15.98	16.50	3.58	3.50	11.52	12.00	
Cloverleaf Dairy...**Cutler** Grain Co.	S. Framingham	17.96	16.50	4.80	3.50	12.06	12.00	
Cloverleaf Dairy...J. Cushing & Co.	Waltham	17.47	16.50	3.98	3.50	12.28	12.00	
Cloverleaf Dairy...P. W. Eaton & Co.	Williamstown	17.70	16.50	3.67	3.50	12.26	12.00	

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*Through error distillers' grains was omitted from the list of ingredients in last year's bulletin. As far as we know there has been no change in the formula of this feed.

MOLASSES FEEDS. **(Containing More Than 15% Protein.)—(*Continued.*)**

Manufacturer or Jobber, Brand and Retailer	Sampled at:	Protein		Fat		Fiber.		Certified Ingredients
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Dwight E. Hamlin, Pittsburg, Pa.								
H. & S. Alfalfa. . Stanley & Harlow	Boston.	19.50	20.00	4.20	3.50	12.35	16.00	Alfalfa, cottonseed meal, cane molasses, dried brewers' grains, dried distillers' grains, salt
H. & S. Horse, Mule and Dairy M. J. Cahill & Co.	Everett.	17.03	14.00	3.52	3.50	13.36	16.00	Alfalfa, cane molasses, old process oil meal, brewers' and distillers' grains, crushed flax seed meal, salt.
H. & S. Horse, Mule and Dairy, Malden Grain Co.	Malden.	15.32	14.00	3.93	3.50	12.85	16.00	
H. & S. Horse, Mule and Dairy, Knight Grain Co.	Newburyport.	16.38	14.00	3.22	3.50	12.05	16.00	
The H-O. Co., Buffalo, N. Y.								
Algrane Milk. . . Lenox Coal Co.	Lenoxdale	15.45	14.00	3.91	4.00	12.81	10.00	Oat hulls, wheat middlings, cottonseed meal, oat shorts, corn gluten feed, ground corn and oats, ground grain screenings, molasses, salt.
International Sugar Feed Co., Minneapolis, Minn.								
International Dairy. . . . A. D Potter	Orange.	18.94	18.00	5.98	5.00	11.72	12.00	Cottonseed meal, molasses, ground grain screenings, ground clipped oat by-product, salt.
International Special. . . J. O. Ellison & Co.	Haverhill.	15.87	15.00	4.81	4.50	11.64	12.00	
International Special. . . Prentiss Brooks & Co.	Holyoke.	14.66	15.00	4.43	4.50	12.60	12.00	
A. Nowak & Son, Buffalo, N. Y.								
Cream-O-Lene. . A. Dodge & Sons Corp.	Beverly.	18.95	20.00	4.78	4.00	7.66	9.00	Cottonseed meal, corn gluten feed, linseed oil meal, wheat middlings, distillers' grains, corn feed meal, clipped oat by-product, malt sprouts, molasses, salt.
Cream-O-Lene. . A. Dodge & Sons Corp.	Beverly.	19.70	20.00	4.27	4.00	8.69	9.00	
Quaker Oats Co., Chicago, Ill.								
Blue Ribbon. . . . W. J. Meek.	Fall River.	27.55	25.00	4.20	3.50	10.36	12.00	Hominy feed, malt sprouts, wheat bran, cottonseed meal, oat middlings, oat hulls, oat shorts, molasses, linseed meal.
Blue Ribbon. . . . J. A. Griffith.	Gt. Barrington.	25.21	25.00	3.55	3.50	11.22	12.00	
Blue Ribbon. . . . G. R. Doane.	N. Brookfield.	22.26	25.00	3.20	3.50	10.68	12.00	
Daisy. . . . . Wilder & Wotton.	Lowell.	16.06	16.00	4.74	4.00	12.02	14.50	Molasses, malt sprouts, cottonseed meal ground grain screenings, clipped oat by-product, linseed oil meal.
Quaker. . . . . S. B. Green & Co.	Watertown.	16.09	16.00	4.82	4.00	11.41	14.50	
Ralston Purina Co., St. Louis, Mo.								
Cow-Chow. . . . . W. E. Bryant & Co.	Brockton.	26.94	24.00	5.23	5.00	12.22	12.00	Cottonseed meal, hominy feed, brewers' grains, molasses, alfalfa, salt.
Cow-Chow. . . . . Sprague & Williams.	S. Framingham.	23.14	24.00	4.70	5.00	14.09	12.00	
Cow-Chow. . . . . Sprague & Williams.	S. Framingham.	23.62	24.00	4.89	5.00	13.79	12.00	
Protena. . . . . A. E. Lawrence & Son.	Ayer.	16.85	16.50	4.22	3.50	11.22	12.00	Cottonseed meal, brewers' grains, clipped oat by-product, ground wheat screenings, molasses, salt.
Protena. . . . . Mackenzie & Winslow.	Fall River.	16.17	16.50	3.30	3.50	10.95	12.00	
Protena. . . . . Mackenzie & Winslow.	Fall River.	15.96	16.50	4.10	3.50	11.47	12.00	
Protena. . . . . J. Cushing & Co.	Hudson.	16.96	16.50	4.35	3.50	11.88	12.00	
Protena. . . . . Sprague & Williams.	S. Framingham.	17.01	16.50	4.56	3.50	10.15	12.00	
Protena. . . . . J. Cushing & Co.	Waltham.	17.12	16.50	4.69	3.50	11.56	12.00	
Purina. . . . . W. E. Bryant & Co.	Brockton.	20.10	20.00	3.48	3.80	14.90	15.00	Cottonseed meal, brewers' grains, corn feed meal, alfalfa, molasses, salt.
Purina. . . . . Prentiss Brooks & Co.	Holyoke.	22.00	20.00	3.89	3.80	13.59	15.00	
Purina. . . . . Berkshire Coal & Grain Co.	N. Adams.	20.92	20.00	3.86	3.80	15.08	15.00	
Purina. . . . . Sprague & Williams.	S. Framingham.	17.83	20.00	3.09	3.80	17.18	15.00	

MOLASSES FEEDS. (Containing more than 15% Protein.)—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Western Grain Products Co., Hammond, Ind.								
Hammond Dairy . . A. E. Lawrence & Son	Ayer	17.64	16.50	4.35	3.50	13.20	11.00	Cottonseed meal, distillers' grains, malt sprouts, clipped oat refuse, ground grain screenings, molasses, salt.
Hammond Dairy . . J. Cushing & Co.	Fitchburg	17.43	16.50	4.84	3.50	11.30	11.00	
Hammond Dairy . . John Shea	Lawrence	17.21	16.50	5.00	3.50	12.16	11.00	
Hammond Dairy . . J. B. Cover & Co.	Lowell	17.44	16.50	4.29	3.50	12.82	11.00	
Hammond Dairy . . A. Culver & Co.	Rockland	15.24	16.50	4.25	3.50	11.30	11.00	

CALF MEALS.

Definition—Calf Meals are proprietary mixtures intended as a feed for young calves.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.	Certified Ingredients.
J. Bibby & Sons, Liverpool, England								
Bibby's . . . . J. Loring & Co.	Watertown	16.03	14.00	15.45	14.00	5.44	7.00	Rice, tapioca meal, sago meal, starch, linseed cake, locust beans, salt.
Blatchford's Calf Meal Factory, Waukegan, Ill.								
Blatchfords . . . . . Eastern Grain Co.	Bridgewater	25.39	24.00	5.29	5.00	5.60	6.75	Locust bean meal, flaxseed, wheat flour, barley meal, ground beans and peas, old process oil meal, cocoa shell meal, cocoanut meal, recleaned cottonseed meal, fenugreek, dried milk, anise, salt
Blatchfords . . . . . W. E. Bryant & Co.	Brockton	24.43	24.00	4.61	5.00	6.45	6.75	
Cloverleaf Milling Co., Buffalo, N. Y.								
Cloverleaf . . . . . . E. J. Adams	Gt. Barrington	27.93	25.00	5.38	6.00	5.75	7.00	Pulverized malt flour, wheat flour, linseed meal, cottonseed meal, salt.
Cloverleaf . . . . . . Jaquith & Co.	Woburn	25.31	25.00	5.40	6.00	5.55	7.00	
Quaker Oats Co., Chicago, Ill.								
Schumacher . . . . **P. W. Eaton & Co.**	**Williamstown**	18.21	19.00	8.41	8.00	1.93	3.00	Oat meal, wheat meal, ground flaxseed, dried casein, bicarbonate of soda, cottonseed meal.
Ryde & Co., Chicago, Ill.								
Ryde's . . . . F. F. Woodward & Co.	Fitchburg	23.82	25.00	4.68	5.00	4.50	6.00	Carob beans, flaxseed, wheat flour, cottonseed meal, beans, lentils, fenugreek, anise, cocoa meal, salt.
Sugarota Calf Meal Co., Winona, Minn.								
Sugarota . . . . Bedford Coal & Grain Co.	Bedford	28.37	25.00	5.65	6.00	5.28	6.00	Cottonseed meal, old process linseed meal, pulverized wheat, pulverized malt.
Sugarota . . . . Bedford Coal & Grain Co.	Bedford	25.35	25.00	5.73	6.00	4.36	6.00	

II. STARCHY (CARBOHYDRATE) FEEDS.

CORN MEAL.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Ground by Retailer							
E. J. Adams	Gt. Barrington	9.19	—	3.07	—	1.65	—
Damaged B. W. Brown Co.	Concord	9.54	—	3.10	—	2.00	—
G. Brown	Ipswich	9.46	—	3.30	—	2.30	—
Bryant & Soule	Middleboro	9.37	—	4.16	—	1.75	—
C. G. Burnham	Holyoke	9.28	—	3.95	—	2.00	—
Heated E. E. Cole	Billerica	9.46	—	3.33	—	1.84	—
J. O. Ellison & Co.	Haverhill	9.15	—	4.23	—	2.25	—
W. K. Gilmore & Sons	Franklin	9.72	—	4.01	—	2.10	—
W. K. Gilmore & Sons	Franklin	9.37	—	4.20	—	2.00	—
Hingham Grain Mill Inc.	Hingham	9.11	—	4.22	—	2.00	—
Wallace Lord	Athol	9.02	—	3.70	—	1.25	—
Mackenzie & Winslow	Fall River	9.19	—	3.48	—	2.65	—
E. C. Packard	Brockton	9.19	—	0.90	—	2.15	—
Geo. H. Parker	Danversport	9.02	—	3.92	—	1.64	—
Prentiss Brooks & Co.	Holyoke	9.28	—	4.01	—	1.67	—
H. C. Puffer Co.	Springfield	9.19	—	4.00	—	2.30	—
Cr. Corn Sift. T. Steinhard	Chester	7.44	—	0.74	—	1.08	—
T. Steinhard	Chester	8.93	—	3.12	—	1.74	—
Feed Meal. C. P. Washburn	Middleboro	10.07	—	4.73	—	3.55	—
H. K. Webster Co.	Lawrence	9.07	—	3.92	—	2.13	—
Buffalo Cereal Co., Buffalo, N. Y.							
Mohawk F. H. Crane & Son	Quincy Adams	8.84	—	3.51	—	0.95	—
J. Cushing & Co., Fitchburg, Mass.							
J. P. Steele Grain Co.	Marlboro	9.02	—	1.62	—	2.35	—
The Cutler Grain Co., N. Wilbraham, Mass.							
Pittsfield Grain Co.	Pittsfield	9.28	—	0.73	—	2.75	—
Mollett Grain Co., McClure, Ohio.							
A. A. A. Robinson & Jones Co.	Natick	9.02	—	4.15	—	1.83	—
C. M. Munroe, Providence ,R. I.							
Feed Meal G. S. Nichols	Rehoboth	9.02	—	4.52	—	3.58	—
Narragansett Milling Co., E. Providence, R. I.							
A North Attleboro Grain Co.	N. Attleboro	9.19	—	4.13	—	3.00	—
A Taunton Grain Co.	Taunton	9.54	—	4.03	—	2.43	—
Taunton Grain Co.	Taunton	9.11	—	3.49	—	2.06	—
Philliod Milling Co., Swanton, Ohio.							
Feed Meal, Stanley, Harlow & Woodlock Co.	Chelsea	11.03	—	3.84	—	2.10	—
St. Albans Grain Co., St. Albans, Vt.							
A F. Diehl & Son	Wellesley	9.63	—	2.21	—	1.50	—
Stratton & Co., Concord, N. H.							
F. O. Andrews	Pepperell	9.19	—	3.85	—	1.65	—
F. O. Andrews	Pepperell	9.72	—	4.76	—	2.65	—
Syracuse Milling Co., Syracuse, N. Y.							
Martin Euler	Lee	10.16	—	2.99	—	0.80	—

RYE MEAL.

Elmer C. Packard, Brockton, Mass.							
E. C. Packard	Brockton	10.68		1.96	—	1.83	—

GROUND OATS.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Chas. M. Cox Co., Boston, Mass.							
A. J. Richards & Son	Weymouth	11.47	—	5.58	—	9.44	—
E. Crosby & Co., Brattleboro, Vt.							
Crushed........N. Hatfield Grain Co.	N. Hatfield	11.56	—	4.74	—	9.15	—
N. Hatfield Grain Co	N. Hatfield	12.78	—	4.87	—	8.00	—
I. J. Rowell	Pepperell	14.45	—	5.55	—	6.38	—
Mansfield Milling Co., Mansfield, Mass.							
A. Milot & Son	Taunton	11.56	—	4.51	—	9.02	—
W. J. Meek, Fall River, Mass.							
W. J. Meek	Fall River	11.38	—	5.53	—	10.04	—
W. N. Potter & Sons, Northampton, Mass.							
W. N. Potter & Sons	Northampton	12.96	—	4.38	—	9.00	—
Stratton & Co., Concord, N. H.							
F. O. Andrews	Pepperell	11.73	—	5.35	—	9.65	—

HOMINY MEAL.

Definition—Hominy Meal, feed or chop is a by-product in the manufacture of hominy grits from corn, and consists of the hull and corn germ, together with a considerable portion of the corn starch.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.
1. Yellow.							
Amendt Milling, Monroe, Mich.							
Feed Meal......C. L. Marsh	Webster	10.51	8.50	8.27	2.50	4.63	6.50
Eagle Roller Mill Co., New Ulm, Minn.							
A. D. Potter	Orange	8.76	10.00	4.94	7.93	2.26	6.43
Plymouth Milling Co., Le Mars, Iowa.							
Plymouth......B. W. Brown Co.	Concord	10.94	10.00	7.48	8.50	4.28	6.35
Quaker Oats Co., Chicago, Ill.							
Plummer & Jennings Gr. Co.	New Bedford	11.38	9.00	7.43	4.00	4.10	4.00
Knight Grain Co	Newburyport	11.82	9.00	8.69	4.00	3.05	4.00
M. G. Williams	Raynham	11.38	9.00	7.72	4.00	3.78	4.00
G. Nichols	Rehoboth	10.94	9.00	8.60	4.00	3.90	4.00
2. White.							
American Hominy Co., Indianapolis, Ind.							
Homco.........A. E. Lawrence & Son	Ayer	11.12	9.50	9.29	7.00	4.04	7.00
Homco.........W. E. Bryant & Co.	Brockton	10.94	9.50	8.76	7.00	4.83	7.00
Homco.........C. A. Pierce	Hinsdale	11.82	9.50	8.14	7.00	4.40	7.00
Homco.........J. Cushing & Co	Hudson	11.38	9.50	9.54	7.00	4.40	7.00
Homco.........Wilder & Wotton	Lowell	11.56	9.50	9.37	7.00	4.55	7.00
Homco.........W. L. Palmer	Medway	11.03	9.50	9.01	7.00	4.94	7.00
Homco.........Mackenzie & Winslow.	New Bedford	10.86	9.50	8.10	7.00	5.05	7.00
Homco.........Knight Grain Co	Newburyport	11.29	9.50	9.37	7.00	4.45	7.00
Homco.........N. Hatfield Grain Co	N. Hatfield	11.29	9.50	9.98	7.00	4.20	7.00
Homco.........W. N. Potter Grain Co.	Princeton	10.68	9.50	7.22	7.00	4.73	7.00
Homco.........W. N. Potter's Sons	Springfield	11.12	9.50	8.75	7.00	4.81	7.00
Baltimore Pearl Hominy Co., Baltimore, Md.							
Mackenzie & Winslow	Fall River	11.64	10.00	6.38	6.00	4.53	8.00
J. O. Ellison & Co.	Haverhill	11.99	10.00	8.35	6.00	4.50	8.00
G. M. Foster Est.	Lowell	12.43	10.00	9.11	6.00	4.63	8.00
Mansfield Milling Co	Mansfield	10.94	10.00	7.17	6.00	5.08	8.00
C. P. Washburn	Middleboro.	11.56	10.00	6.70	6.00	4.50	8.00
Ropes Bros.	Salem	11.03	10.00	6.62	6.00	5.45	8.00
Curley Bros	Wakefield	10.90	10.00	6.57	6.00	5.06	8.00
Buffalo Cereal Co., Buffalo, N. Y.							
J. H. Nye	Brockton	11.21	10.00	6.47	6.00	4.50	5.00
W. N. Potter Grain Co.	Princeton	11.56	10.00	6.75	6.00	3.88	5.00
Potter Grain Co.	Shelburne Falls	11.47	10.00	7.63	6.00	3.50	5.00
Cummings & Chute	Woburn	11.03	10.00	6.30	6.00	4.68	5.00

HOMINY MEAL.—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Chas. M. Cox Co., Boston, Mass.							
Paragon........M. G. Williams............	Raynham.......	10.86	10.50	8.49	7.50	4.37	—
Wirthmore.....Plummer & Jennings Gr. Co.	New Bedford....	10.94	9.50	8.17	7.50	4.85	5.00
Wirthmore.....W. W. Holmes............	Webster.........	10.86	9.50	7.27	7.50	4.69	5.00
Wirthmore.....F. Diehl & Son............	Wellesley........	10.94	9.50	6.99	7.50	4.00	5.00
Wirthmore.....F. Diehl & Son............	Wellesley........	10.77	9.50	7.93	7.50	5.44	5.00
Donahue-Stratton Co., Milwaukee, Wis.							
Hiquality.......W. L. Palmer..............	Medway........	11.82	10.00	7.81	7.00	4.03	7.00
Evans Milling Co., Indianapolis, Ind.							
Evans.........W. J. Meek................	Fall River.......	11.82	10.00	6.57	7.50	4.79	7.00
Chas. A. Krause Milling Co., Milwaukee, Wis.							
Badger.........J. P. Thacher..............	Littleton........	11.73	10.00	7.58	6.00	5.98	5.00
Badger.........Pittsfield Grain Co.........	Pittsfield........	11.12	10.00	6.80	6.00	4.70	5.00
Badger.........Cutler Grain Co............	S. Framingham..	11.99	10.00	6.08	6.00	4.63	5.00
Badger.........H. H. Capen...............	Spencer.........	10.68	10.00	6.66	6.00	4.66	5.00
H. C. McEachron Co., Wausau, Wis.							
W. E. Bryant..............	Brockton........	11.29	11.25	9.11	8.50	3.80	4.00
Miner-Hillard Milling Co., Wilkes-Barre, Pa.							
W. B. Herrick..............	Beverly.........	10.94	10.00	6.51	5.00	4.88	5.00
W. E. Bryant & Co.........	Brockton........	10.77	10.00	5.39	5.00	2.18	5.00
Geo. F. Wetherbee Co......	Gardner.........	10.68	10.00	6.07	5.00	3.98	5.00
G. B. Brown...............	Ipswich.........	11.21	10.00	6.33	5.00	3.74	5.00
John Franks...............	New Bedford....	11.56	10.00	8.34	5.00	3.97	5.00
E. C. Frost................	Shelburne Falls..	11.38	10.00	6.31	5.00	3.20	5.00
Mystic Milling Co., Sioux City, Iowa.							
Eastern Grain Co..........	Bridgewater.....	11.29	11.00	6.80	6.50	4.15	5.00
Eastern Grain Co..........	Bridgewater.....	10.59	11.00	7.90	6.50	3.68	5.00
E. J. Adams...............	Gt. Barrington...	10.86	11.00	7.01	6.50	4.55	5.00
E. A. Cole................	Housatonic......	10.86	11.00	7.52	6.50	4.85	5.00
Plummer & Jennings Gr. Co.	New Bedford....	11.03	11.00	7.15	6.50	3.61	5.00
Mackenzie & Winslow......	New Bedford....	10.59	11.00	7.33	6.50	4.60	5.00
Beaver Coal & Grain Co....	Norwood........	11.12	11.00	7.97	6.50	4.08	5.00
Beaver Coal & Grain Co....	Norwood........	10.51	11.00	7.06	6.50	4.45	5.00
Patent Cereals Co., Geneva, N. Y.							
M. C. Richmond...........	Adams..........	12.08	10.00	6.43	6.00	4.36	5.00
G. W. King................	Charlton........	11.21	10.00	7.11	6.00	3.92	5.00
A. D. Potter...............	Orange..........	11.03	10.00	6.25	6.00	4.49	5.00
J. E. Soper Co., Boston, Mass.							
Blue Ribbon....G. H. Parker...............	Danversport.....	11.29	10.00	9.20	6.00	1.78	5.00
Blue Ribbon....Mackenzie & Winslow.......	Fall River.......	11.21	10.00	9.40	6.00	4.92	5.00
Blue Ribbon....G. M. Foster Est...........	Lowell..........	11.12	10.00	6.17	6.00	4.68	5.00
Blue Ribbon....Ropes Bros................	Salem...........	11.47	10.00	9.09	6.00	4.50	5.00
Blue Ribbon....A. N. Whittemore & Co.....	Worcester.......	11.03	10.00	6.94	6.00	4.45	5.00
Blue Ribbon....A. N. Whittemore & Co.....	Worcester.......	10.51	10.00	6.45	6.00	4.35	5.00

PROVENDER.

Definition—Provender is a mixture of whole corn and whole oats ground together.

Ground by Retailer:							
Berkshire Coal & Grain Co..	N. Adams.......	10.51	—	4.15	—	5.30	—
J. S. Nason & Co...........	Westboro........	10.33	—	2.97	—	4.48	—
With Corn Screen. E. C. Packard.............	Brockton........	10.77	—	3.80	—	5.53	—
H. C. Puffer Co............	Springfield......	10.68	—	4.00	—	4.75	—
Buffalo Cereal Co., Buffalo, N. Y.							
½ and ½........Lenox Coal Co..........	Lenoxdale......	10.68	9.00	6.31	4.00	6.14	4.00
E. A. Cowee Est., Worcester, Mass.							
I. J. Rowell................	Pepperell.......	11.29	9.00	4.55	3.00	5.75	10.00
I. J. Rowell................	Pepperell.......	10.16	9.00	3.74	3.00	5.34	10.00
Globe Elevator Co., Buffalo, N. Y.							
½ and ½........F. B. French & Co..........	Sheffield........	11.38	—	4.87	—	5.13	—

PROVENDER.—*(Continued.)*

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Imperial Grain & Milling Co., Toledo, Ohio.							
Imp'l. Steam Cooked, F. F. Woodward & Co.	Fitchburg	9.98	9.50	4.69	4.00	3.45	4.00
Imp'l. Steam Cooked, F. H. Crane & Sons	Quincy Adams	10.16	9.50	4.72	4.00	3.40	4.00
Imp'l. Steam Cooked, Jacquith & Co	Woburn	10.42	9.50	4.67	4.00	3.58	4.00
Meech & Stoddard, Middletown, Conn.							
John Franks	New Bedford	10.68	—	4.89	—	5.78	—
Park & Pollard Co., Boston, Mass.							
A. M. Haggart & Son	Franklin	10.59	10.00	3.73	3.50	6.52	8.00
F. B. French & Co	Sheffield	10.51	10.00	4.37	3.50	5.30	8.00
Stanley Wood Grain Co	Taunton	11.99	10.00	4.97	3.50	6.50	8.00
Stanley Wood Grain Co	Taunton	10.68	10.00	4.10	3.50	5.55	8.00
Smith, Northam Co., Hartford, Conn.							
A. M. Haggart & Sons	Franklin	9.98	9.00	4.28	4.00	5.18	—
Stratton & Co., Concord, N. H.							
F. O. Andrews	Pepperell	10.16	—	4.74	—	3.95	—
Syracuse Milling Co., Syracuse, N. Y.							
½ & ½ Martin Euler	Lee	11.29	—	3.95	—	4.63	—
½ & ½ Lenox Coal Co	Lenoxdale	10.59	—	4.26	—	6.10	—

DRIED BEET PULP.

Definition—Dried Beet Pulp is the dried sugar beet residue obtained in the manufacture of beet sugar.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.
Hottelet & Co., Milwaukee, Wis.							
Potter Grain Co	Shelburne Falls	9.63	8.00	0.68	0.50	18.15	20.00
Larrowe Milling Co., Detroit, Mich.							
Eastern Grain Co.	Bridgewater	9.19	8.00	0.92	0.50	18.50	20.00
Mackenzie & Winslow	Fall River	10.42	8.00	1.04	0.50	18.50	20.00
Rollstone Grain Co	Fitchburg	9.37	8.00	0.80	0.50	18.70	20.00
A. H. Wood & Co	Framingham	9.11	8.00	0.47	0.50	19.73	20.00
J. P. Steele Grain Co	Marlboro	8.58	8.00	0.73	0.50	19.23	20.00
P. Foisy	New Bedford	8.67	8.00	0.83	0.50	17.38	20.00
With Molasses, C. Parkinson	Seekonk	8.14	9.00	1.00	0.50	17.10	18.00
With Molasses, H. C. Puffer Co	Springfield	8.84	9.00	0.72	0.50	19.00	18.00
Charles Pope, Chicago, Ill.							
H. K. Webster	Lawrence	9.11	8.00	0.85	0.50	18.43	20.00

OAT FEED.

Definition—Oat Feed is the residue resulting from the manufacture of cereal breakfast foods from oats.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.
D. H. Grandin Milling Co., Jamestown, N. Y.							
"Extra Good" . . A. Culver Co	Rockland	4.29	5.00	2.40	2.50	26.92	30.00
Hecker Cereal Co., New York.							
Oat Hulls . . . . . . Ropes Bros	Danvers	2.54	3.00	1.17	1.50	30.24	31.00
H-O. Co. Mills, Buffalo, N. Y.							
Oat Hulls . . . . . . Bedford Coal & Grain Co	Bedford	2.45	4.00	0.59	2.00	31.40	28.00
National Feed Co., St. Louis, Mo.							
Oat Hulls . . . . . . J. Cushing & Co	Waltham	7.27	6.50	2.33	2.75	25.50	26.00
Northern Illinois Cereal Co., Lockport, Ill.							
W. G. Horton	Ipswich	5.78	5.50	2.01	3.00	26.16	30.00
G. H. Reed	S. Acton	6.39	5.50	3.25	3.00	25.30	30.00
Robin Hood Mills, Moose Jaw, Sask. Canada.							
J. B. Brown	Ipswich	4.82	7.00	1.87	3.50	27.85	30.00
W. G. Horton	Ipswich	3.76	5.25	2.22	2.50	27.00	28.00
John Franks	New Bedford	5.34	7.00	2.52	3.50	28.13	30.00
J. B. Bridges	S. Deerfield	7.62	5.25	4.12	2.50	21.50	28.00

STOCK AND HORSE FEEDS.

Manufacturer or Jobber Brand and Retailer.	Sampled at:	Protein. Found	Protein. Guar.	Fat. Found	Fat. Guar.	Fiber. Found	Fiber. Guar.	Certified Ingredients.
		%	%	%	%	%	%	
Buffalo Cereal Co., Buffalo, N. Y.								
Horse Feed.... J. H. Nye	Brockton	12.87	10.00	4.82	4.00	9.10	9.00	Ground oats, corn, barley, wheat middlings, hominy feed, oat shorts, oat middlings, oat hulls, corn gluten feed, linseed meal
Horse Feed.... J. O. Ellison & Co	Haverhill	12.08	10.00	4.76	4.00	10.00	9.00	
Horse Feed.... G. M. Foster Est	Lowell	13.04	10.00	4.87	4.00	9.75	9.00	
Horse Feed.... A. Culver & Co.	Rockland	12.26	10.00	5.01	4.00	9.78	9.00	
Iroquois ...... C. F. Pease	Chester	10.38	7.00	6.42	3.00	9.80	9.00	Ground corn, hominy feed, oat shorts, oat hulls.
Iroquois ...... Horvitz Grain Co.	New Bedford	10.24	7.00	6.74	3.00	9.39	9.00	
Iroquois ...... Plummer & Jennings Gr. Co.	New Bedford	10.07	7.00	6.02	3.00	9.63	9.00	
Steam Cooked .H. K. Webster Co	Lawrence	9.89	8.00	4.59	4.00	6.50	9.00	Ground corn and oats, hominy feed, oat shorts oat hulls, oat middlings.
Steam Cooked .Horvitz Grain Co.	New Bedford	10.77	8.00	6.12	4.00	7.71	9.00	
Steam Cooked .I. J. Rowell	Pepperell	10.68	8.00	5.23	4.00	7.25	9.00	
Steam Cooked ..A. Culver Co.	Rockland	10.42	8.00	5.07	4.00	7.50	9.00	
Steam Cooked ..A. Culver Co.	Rockland	9.98	8.00	5.68	4.00	7.57	9.00	
Stock Feed..... H. K. Webster	Lawrence	10.94	8.00	6.99	4.00	9.48	9.00	Ground corn and oats, wheat middlings, hominy feed, oat shorts, oat hulls, oat middlings.
Stock Feed..... Morse Bros.	Southbridge	10.07	8.00	5.49	4.00	9.85	9.00	
Chesbro Milling Co., Salamanca, N. Y.								
Chesbro........ C. J. Burnham	Holyoke	9.81	8.00	5.51	3.25	11.50	10.00	Ground corn, barley, cottonseed meal, hominy, oat shorts, oat middlings, oat hulls, salt.
Corno Mills Co., St. Louis, Mo.								
Corno Horse & Mule, Sumner, Crosby & Son	Boston	11.03	10.00	3.67	3.50	14.79	12.00	Alfalfa, cracked corn, cottonseed meal, hominy feed, oat feed.
Corno Horse & Mule, Mansfield Milling Co.	Mansfield	10.94	10.00	4.51	3.50	14.90	12.00	
Corno Horse & Mule, A. Milot & Son	Taunton	10.59	10.00	3.33	3.50	13.65	12.00	
Chas. M. Cox Co., Boston, Mass.								
Charlestock .... Eastern Grain Co.	Bridgewater	7.18	6.00	2.43	3.00	12.95	16.00	Cracked corn, oat feed and hominy or corn meal.
Charlestock .... P. W. Eaton & Co.	Williamstown	8.06	6.00	4.05	3.00	13.90	16.00	
Wirthmore..... C. A. Pierce	Hinsdale	10.59	9.00	8.00	4.00	7.70	9.50	Ground barley, ground oats, hominy meal, oat middlings, oat shorts, oat hulls.
Wirthmore..... Plummer & Jennings Gr. Co.	New Bedford	9.89	9.00	5.97	4.00	8.15	9.50	
Wirthmore..... F. A. Fales & Co.	Norwood	10.94	9.00	4.58	4.00	7.59	9.50	
Wirthmore..... I. Morton & Co.	Plymouth	9.98	9.00	7.00	4.00	8.19	9.50	
Wirthmore..... A. Culver Co.	Rockland	10.68	9.00	6.51	4.00	7.40	9.50	
Wirthmore..... W. N. Potter's Sons	Springfield	10.86	9.00	6.46	4.00	8.08	9.50	
Wirthmore..... J. S. Nason & Co.	Westboro	10.59	9.00	7.45	4.00	8.08	9.50	
Wirthmore..... A. J. Richards & Son	Weymouth	10.86	9.00	7.68	4.00	6.35	9.50	
E. Crosby & Co., Brattleboro, Vt.								
Crosby's....... N. Hatfield Grain Co.	N. Hatfield	10.07	9.00	6.67	4.00	10.28	10.00	Ground barley, hominy feed, ground oats, oat feed.

STOCK AND HORSE FEED.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Elmore Milling Co., Oneonta, N. Y.								
Elmore's....... A. Dodge & Sons Corp.	Beverly	9.19	10.00	4.58	5.00	14.80	16.00	Oat hulls, oat shorts, oat middlings, corn meal, hominy meal, dried brewers' grains, wheat bran, salt.
Elmore's....... Knight Grain Co.	Newburyport	9.54	10.00	4.67	5.00	12.30	16.00	
Elmore's....... J. B. Bridges & Co.	S. Deerfield	11.73	10.00	5.50	5.00	11.50	16.00	
Elmore's....... P. W. Eaton & Co.	Williamstown	11.03	10.00	4.68	5.00	11.35	16.00	
John Franks, New Bedford, Mass.								
Climax......... J. Franks	New Bedford	8.67	9.00	4.72	6.00	15.00	12.00	Oat feed, hominy feed, cracked corn, oats, salt.
J. B. Garland & Son, Worcester, Mass.								
Red Tag A..... G. W. King	Charlton	11.99	7.00	5.23	3.00	10.65	14.00	Corn, wheat middlings, barley, oat feed, ground screenings.
Red Tag A..... J. B. Garland & Son	Worcester	12.08	7.00	5.23	3.00	10.50	14.00	
Red Tag B..... H. W. Kimball	Westboro	9.46	7.00	3.53	3.00	14.00	16.00	Corn, wheat middlings, oat feed, ground screenings.
Red Tag B..... J. B. Garland & Son	Worcester	10.33	7.00	5.02	3.00	12.85	16.00	
D. H. Grandin Milling Co., Jamestown, N. Y.								
Grandin's...... Ropes Bros.	Danvers	9.54	8.50	6.73	3.50	11.20	10.00	Oats, corn, barley, barley middlings. hominy meal, oat hulls, salt.
Grandin's...... Plummer & Jennings Gr. Co.	New Bedford	9.89	8.50	7.08	3.50	9.74	10.00	
Grandin's...... A. N. Whittemore & Co.	Worcester	9.81	8.50	6.90	3.50	10.54	10.00	
Grandin's...... A. N. Whittemore & Co.	Worcester	9.72	8.50	6.88	3.50	10.60	10.00	
W. H. Haskell & Co., Toledo, Ohio								
Haskell's....... Rollstone Grain Co.	Fitchburg	10.59	8.00	7.43	4.00	6.45	8.00	Ground corn, ground oats, hominy feed, oat hulls, oat shorts, salt.
Haskell's....... J. O. Ellison & Co.	Haverhill	9.68	8.00	7.10	4.00	8.72	8.00	
Haskell's...... Mansfield Mill'ing Co.	Mansfield	10.86	8.00	7.78	4.00	8.27	8.00	
Haskell's....... Mackenzie & Winslow	New Bedford	10.51	8.00	7.13	4.00	7.60	8.00	
Haskell's....... A. Milot & Son	Taunton	9.98	8.00	7.33	4.00	8.20	8.00	
Wm. S. Hills Co., Boston, Mass.								
Purity......... C. G. Jordan	Weymouth	11.82	10.00	5.86	3.25	9.45	9.00	Oat feed, corn, barley, wheat middlings, hominy, salt.
H-O. Co. Mills., Buffalo, N. Y.								
N. E. Stock..... A. T. Butler	Adams	10.51	9.00	5.75	4.00	10.75	10.00	Wheat middlings, ground corn, hominy feed, oat hulls, oat shorts, ground oats, molasses, salt, ground grain screenings.
N. E. Stock..... Knight Grain Co.	Newburyport	8.14	9.00	2.90	4.00	7.58	10.00	
N. E. Stock..... Beaver Coal & Grain Co.	Norwood	9.81	9.00	4.17	4.00	10.19	10.00	
N. E. Stock..... Beaver Coal & Grain Co.	Norwood	10.51	9.00	5.56	4.00	10.30	10.00	
Imperial Grain & Milling Co., Toledo, Ohio								
C. O. & B...... J. H. Nye	Brockton	9.37	8.90	3.41	3.70	11.35	11.95	Shelled and ear corn, oats, barley, wheat flour, oat hulls, oat shorts, oat middlings, cottonseed meal, salt.
Lexington Grain Co,. Lexington, Mass.								
Alfalfa Horse....... Lexington Grain Co.	Lexington	12.96	12.00	5.77	3.00	8.20	10.00	Alfalfa meal, wheat mxd. feed, hom. meal, linseed meal, wheat mdlgs., ground oats, salt.
Alfalfa Union Horse, Lexington Grain Co.	Lexington	13.04	11.00	6.32	3.00	7.50	10.00	Alfalfa meal, hominy meal, wheat mixed feed, wheat middlings, grain screenings. provender, oat screenings, corn germ meal, salt
Alfalfa Union Horse, Lexington Grain Co.	Lexington	12.74	11.00	6.21	3.00	6.74	10.00	

STOCK AND HORSE FEEDS.—*Continued*

Manufacturer or Jobber. Brand and Retailer	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Meech & Stoddard, Inc., Middletown, Conn.								
M. & S. . . . . .A. H. Wood & Co.	Framingham	9.02	9.00	5.54	3.00	14.01	12.00	Ground oat hulls and white hominy feed.
M. & S. . . . . .Weld & Beck	Southbridge	10.42	9.00	7.83	3.00	6.89	12.00	
North Adams Flour & Grain Co., North Adams								
Excelsior. . . . . . . .N. Adams Flour & Gr. Co.	North Adams	10.51	10.00	4.48	5.00	11.50	10.00	Corn meal, hominy feed, dried brewers' grains, wheat bran, oat hulls, oat middlings, oat shorts, salt.
Park & Pollard, Boston Mass.								
Stock. . . . . .Mackenzie & Winslow	Fall River	8.58	9.00	4.86	3.00	14.40	12.00	Wheat bran, wheat middlings, corn, barley, oats, corn gluten feed, cottonseed meal, beet pulp, oat hulls, hominy feed, linseed meal, salt.
Stock. . . . . .A. M. Haggart & Son.	Franklin	11.91	9.00	3.73	3.00	12 93	12 00	
Stock. . . . . .Paul Vigeant	Lowell	9.63	9.00	4.84	3.00	13.08	12 00	
Stock. . . . . .Plummer & Jennings Gr. Co.	New Bedford	12.17	9.00	4.25	3.00	13.95	12 00	
Stock. . . . . .C. L. Marsh	Webster	8.41	9.00	4.27	3.00	12.00	12.00	
W. N. Potter & Sons, Greenfield, Mass.								
Special Provender, W. N. Potter Grain Co.	Princeton	11.38	8.75	4.47	3.50	7.00	8.00	Corn, oats, barley, oat hulls.
Special Provender, W. N. Potters Sons.	Springfield	10.07	8.75	3.17	3.50	7.15	8.00	
Special Provender, C. L. Marsh	Webster	8.14	8.75	1.44	3.50	8.00	8.00	
Quaker Oats Co., Chicago, Ill.								
Boss. . . . . .Geo. F. Wetherbee Co.	Gardner	8.58	8.00	3.50	3.00	8.61	12.00	Corn meal, hominy feed, oat middlings oat hulls, oat shorts, salt.
Boss. . . . . .Geo. F. Wetherbee Co.	Gardner	8.76	8.00	3.12	3.00	9.82	12 00	
Schumacher Feed, J. O. Ellison & Co.	Haverhill	10.51	10.00	4.39	3.25	11.81	10 00	Ground corn, hominy feed, ground barley, wheat flour, wheat middlings, cottonseed meal, oat (middlings, hulls and shorts) ground puffed wheat, ground puffed rice, salt.
Schumacher Feed, Conant & Co.	Littleton	11.21	10.00	3.87	3.25	8.93	10.00	
Schumacher Feed, A. Milot & Son.	Taunton	11.56	10.00	3.45	3.25	9.76	10.00	
Schumacher Special, Butman & Cressey.	Lynn	10.07	9.25	3.63	3.25	7.16	8.00	Corn, crushed oats, oat (middlings, hulls, shorts), salt.
Sterling. . . . . . . .Geo. F. Wetherbee Co.	Gardner	10.16	10.00	3.55	3.25	8.04	10.00	Corn meal, hominy feed, ground barley, wheat flour and middlings, cottonseed meal, oat (middlings, hulls and shorts) ground puffed wheat and rice, salt.
Sterling. . . . . . . .Geo. F. Wetherbee Co.	Gardner	11.56	10.00	5.16	3.25	10.30	10.00	
Victor. . . . . .Bedford Coal & Grain Co.	Bedford	9.11	8.00	4.74	3.00	10.30	12.00	Corn meal, hominy meal, oat (middlings, hulls and shorts) salt.
Victor. . . . . .G. H. Parker	Danversport	9.19	8 00	5.01	3.00	10.95	12 00	
White Diamond Brockleman Bros.	Clinton	8.14	8.00	2.87	3.25	7.65	9.00	Corn meal, hominy feed, oat (middlings, hulls, shorts), salt.
White Diamond F. F. Woodward	Fitchburg	8.41	8.00	3.07	3.25	8.10	9.00	
White Diamond C. L. Marsh	Webster	9.28	8.00	5.80	3.25	8.43	9.00	
George H. Reed, South Acton, Mass.								
Acton Stock. . . .G. H. Reed	S. Acton	9.98	10.00	6.89	8.00	9.81	6.00	Hominy meal, oat feed, wheat middlings, salt.

STOCK AND HORSE FEEDS.—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Stratton & Co., Concord, N. H.								
N. H. Stock....F. O. Andrews	Pepperell	10.68	10.00	3.95	4.00	4.54	6.00	Wheat middlings, corn, hominy, oat hulls, oat shorts, ground oats, salt.
Stratton Stock..F. O. Andrews	Pepperell	10.33	9.00	5.15	4.00	9.85	9.00	
Stratton Stock..F. O. Andrews	Pepperell	10.24	9.00	4.86	4.00	10.00	9.00	
Syracuse Milling Co., Syracuse, N. Y.								
Syragold.......M. Callahan Co.	Holyoke	7.88	7.50	3.25	3.00	13.55	12.00	Ground corn and cob, oats, oat hulls, oat middlings, dried brewers' grains, salt.
C. P. Washburn, Middleboro Mass.								
Stock.........C. P. Washburn	Middleboro	14.63	10.00	3.50	3.50	8.00	12.00	Corn meal, hominy meal, barley cottonseed meal, wheat flour, alfalfa, oat hulls, molasses, sphagnum moss, salt.
Stock.........C. P. Washburn	Middleboro	13.04	10.00	3.60	3.50	10.50	12.00	
F. F. Woodward Co., Fitchburg, Mass.								
Very Best......A. H. Wood & Co.	Framingham	10.51	8.50	6.83	3.50	8.78	10.00	Corn, oats, barley, wheat middlings, hominy meal, oat hulls, salt.
Very Best......H. G. Hill Co	Williamsburg	10.51	8.50	5.43	3.50	7.86	10.00	

MOLASSES FEEDS (Less than 15% Protein.)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.	Certified Ingredients.
Allneeda Mills Co., East St. Louis, Ill.								
Butterfat .....W. G. Horton	Ipswich	14.31	15.00	2.37	3.50	12.73	13.50	Molasses, cottonseed meal, alfalfa, corn meal, ground grain screenings from corn, oats, barley and wheat, salt.
American Milling Co., Peoria, Ill.								
Sucrene Horse and Mule, Wilder & Wotton	Lowell	10.83	10.00	2.45	2.50	12.93	12.00	Molasses, alfalfa, corn, oats, barley, salt.
Cloverleaf Milling Co., Buffalo, N. Y.								
Cloverleaf Horse, S. L. Davenport & Son	N. Grafton	9.58	10.00	1.89	2.00	12.05	12.00	Cracked corn, crushed oats, alfalfa meal, molasses, salt.
Cloverleaf Horse, Cutler Grain Co.	S. Framingham	9.63	10.00	2.04	2.00	8.89	12.00	
Dwight E. Hamlin, Pittsburg, Pa.								
Green Meadow, Stanley, Harlow & Woodlock Co.	Chelsea	10.00	9.00	2.17	2.00	11.25	10.00	Corn, oats, alfalfa, cane syrup.
Purekane ....Stanley & Harlow	Boston	8.80	5.00	2.42	1.50	7.05	8.00	Dried brewers' and distillers' grains, cane molasses.
H-O Co., Buffalo N. Y.								
Algrane Horse . J. O. Ellison & Co	Haverhill	11.57	11.00	3.46	4.00	11.16	10.00	Oats, oat shorts and hulls, corn, molasses, wheat middlings, hominy feed, gluten feed, ground grain screenings, salt.
Algrane Horse . Beaver Coal & Grain Co.	Norwood	11.64	11.00	4.56	4.00	9.78	10.00	

MOLASSES FEEDS. (Less than 15% Protein.) (*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at.	Protein. Found	Protein. Guar.	Fat. Found	Fat. Guar.	Fiber. Found	Fiber. Guar.	Certified Ingredients
		%	%	%	%	%	%	
Wm. S. Hills Co., Boston, Mass.								
Kingfield Meadow, M. S. Cahill & Co.	Everett	13.81	10.00	0.56	5.00	15.60	26.00	Alfalfa meal, molasses.
Meader Atlas Co., New York								
Trojan Horse . Plummer & Jennings Gr. Co.	New Bedford	14.04	12.00	3.19	3.00	7.39	8.00	Whole oats, cracked corn, dried brewers' grains, molasses.
Molassine Co. of America, Boston, Mass.								
Molassine Meal A. M. Haggart & Son	Franklin	8.82	7.00	0.63	0.50	6.25	7.00	Molasses, sphagnum moss.
Molassine Meal, C. B. Sampson	Holyoke	9.15	7.00	0.43	0.50	6.10	7.00	
National Oats Co., St. Louis, Mo.								
Molasco . . Mansfield Milling Co.	Mansfield	10.54	8.50	3.17	2.50	12.89	12.00	Alfalfa, cracked corn, oat feed, cane molasses, ground grain screenings, cottonseed meal.
Molasco . . . . A. Milot & Son	Taunton	9.87	8.50	2.87	2.50	12.32	12.00	
A. Nowak & Son, Buffalo, N. Y.								
Vim-O-Lene. . . . A. Dodge & Son Corp	Beverly	10.16	8.00	3.50	2.00	5.07	9.00	Crushed oats, cracked corn, corn feed meal, wheat bran, molasses.
Vim-O-Lene. . . . A. Dodge & Son Corp.	Beverly	9.90	8.00	4.01	2.00	5.82	9.00	
Omaha Alfalfa Milling Co., Omaha, Neb.								
Cream Alfalfa. . . H. C. Puffer Co.	Springfield	9.56	11.00	1.35	2.25	10.78	15.00	Corn, alfalfa, molasses.
Green Meadow. . Bond Grain Co	Charlton	8.08	11.00	0.49	1.00	15.59	25.00	Alfalfa meal, molasses.
Peerless Horse. . H. C. Puffer Co.	Springfield	10.15	10.00	2.42	2.00	9.22	12.00	Corn, oats, alfalfa, molasses.
M. C. Peters Mill Co., Omaha, Neb.								
Arab Horse. . . . Lexington Grain Co.	Lexington	11.23	9.00	2.26	2.00	8.89	15.00	Corn, oats, alfalfa, molasses.
Arab Horse. . Ropes Bros.	Salem	10.25	9.00	2.19	2.00	10.89	15.00	
Arab Horse. . . . Ropes Bros.	Salem	10.22	9.00	2.92	2.00	10.11	15.00	
June Pasture. . . . Lexington Grain Co.	Lexington	12.07	10.00	0.96	0.50	20.10	26.00	Alfalfa, molasses.
King Corn. . . . . Ropes Bros	Salem	10.32	9.00	1.82	1.50	14.68	18.00	Corn, oats, alfalfa, molasses.
King Corn. . . . . Ropes Bros.	Salem	9.81	9.00	2.11	1.50	12.89	18.00	
Peters Repeter. . Torrence, Vary & Co.	Lynn	9.82	9.00	1.88	1.50	11.12	18.00	Corn, oats, alfalfa, molasses.
Peters Repeter. . Ropes Bros.	Salem	9.74	9.00	2.27	1.50	9.73	18.00	
Quaker Oats Co., Chicago, Ill.								
Green Cross. . . . G. R. Doane.	N. Brookfield	9.50	10.00	2.25	2.50	7.19	12.00	Alfalfa meal, ground corn, crushed oats, cottonseed meal, molasses, oat (middlings, hulls and shorts.)
Green Cross. . . . M. G. Williams	Raynham	9.38	10.00	2.71	2.50	10.57	12.00	
Green Cross. . . . S. B. Green & Co.	Watertown	9.44	10.00	2.51	2.50	9.79	12.00	
Green Cross. . . . W. W. Holmes	Webster	9.83	10.00	2.44	2.50	11.68	12.00	

MOLASSES FEEDS (Less than 15% Protein.)—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Ralston Purina Co., St. Louis, Mo.								
Purina with Molasses, G. H. Parker	Danversport	8.92	9.30	2.37	1.70	8.81	11.70	Cracked corn, whole oats, alfalfa, molasses, salt.
Purina with Molasses, Prentiss Brooks & Co.	Holyoke	9.90	9.30	2.55	1.70	10.41	11.70	
Purina with Molasses, I. Morton & Co.	Plymouth	9.69	9.30	2.94	1.70	8.91	11.70	
Purina with Molasses, Sprague & Williams	S. Framingham	8.87	9.30	2.94	1.70	10.16	11.70	
Purina with Molasses, J. Cushing & Co.	Waltham	9.77	9.30	2.55	1.70	10.55	11.70	
Purina O-Molene, J. Cushing & Co	Waltham	10.35	8.25	3.08	2.50	9.88	9.00	Crushed oats, cracked corn, alfalfa, molasses, salt.
Somers & Co., San Francisco, Cal.								
Economy Horse.....A. Dodge & Son Corp.	Beverly	8.21	9.50	2.09	2.10	12.03	9.10	Alfalfa, crushed oats, crushed barley, molasses.
Green Pasture Stock A. H. Wood & Co.	Framingham	10.28	9.50	1.12	4.00	16.50	14.50	Alfalfa, cane molasses.
Western Grain & Sugar Products Co., San Francisco, Cal.								
Sweetened Cocoanut Meal, W. G. Horton	Ipswich	10.49	11.00	1.74	3.50	3.35	5.50	Cocoanut meal, molasses.
Xtra Vim Molasses Feed Co., Boston, Mass.								
Xtra Vim......W. J. Meek	Fall River	4.99	4.61	0.98	0.81	5.23	4.50	Cane molasses, sphagnum moss.
Xtra Vim......W. L. Palmer	Medway	5.24	4.61	0.50	0.81	4.95	4.50	
Xtra Vim......Cutler Grain Co.	S. Framingham	4.78	4.61	0.41	0.81	5.05	4.50	
Xtra Vim......A. N. Whittemore & Co.	Worcester	4.53	4.61	0.34	0.81	4.90	4.50	

MISCELLANEOUS FEEDS.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
J. Bibby & Sons, Liverpool, Eng.								
Pig Meal.......J. Loring & Co.	Watertown......	13.84	12.00	4.00	4.00	10.00	10.00	Corn, wheat middlings, rice polish, sago meal, tapioca meal, peanut cake, palm kernel meal, locust beans, molasses, salt.
Pig Meal.......J. Loring & Co............	Watertown......	12.83	12.00	5.01	4.00	10.18	10.00	
A. H. Brown & Bros., Boston, Mass.								
Dried Grains....Geo. H. Reed	S. Acton........	11.91	10.00	4.02	2.50	15.26	20.00	Residue from malt, flour and bran after manufacture of infant food.
Dried Grains....J. Cushing & Co..........	Waltham........	12.26	10.00	4.40	2.50	15.57	20.00	
Glen Mills Cereal Co., Rowley, Mass.								
Corn Bran. ....Glen Mills Cereal Co.......	Rowley.........	7.62	9.00	3.33	4.00	12.70	9.00	
Corn Middlings. Glen Mills Cereal Co.......	Rowley.........	8.58	—	4.72	—	12.27	—	
Lexington Grain Co., Lexington, Mass.								
Star Hog Feed..Lexington Grain Co.......	Lexington.......	12.43	10.00	3.45	3.00	6.05	11.00	Wheat middlings, corn meal, mill refuse, mill sweepings, salt.
Star Hog Feed..Lexington Grain Co	Lexington......	13.93	10.00	4.90	3.00	4.83	11.00	
K. & E. Neumond, New York								
Ground Cob Meal. A. Dodge & Sons Corp....	Beverly.......	2.98	1.90	0.57	0.38	31.41	30.50	Ground corn cobs.
Ground Cob Meal, A. Dodge & Sons Corp....	Beverly.	2.36	1.90	0.72	0.38	32.13	30.50	

POULTRY FEEDS.
MEAT SCRAPS.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Ash	
		Found	Guar.	Found	Guar.	Found	Guar
		%	%	%	%	%	%
First Grade (over 45% protein.)							
Beach Soap Co., Lawrence, Mass.							
Star ... W. J. Meek	Fall River	47.37	40 00	8.79	15.00	29.39	—
Butcher's Rendering Co., Fall River, Mass.							
Mansfield Milling Co.	Mansfield	69.36	60.00	14.93	10.00	9.62	—
Owen Coogan & Sons, Pittsfield, Mass.							
Pittsfield Grain Co.	Pittsfield	50.53	45.00	24.52	10.00	18.76	—
Lowell Rendering Co., Lowell, Mass.							
Peerless ... G. M. Foster Est.	Lowell	46.75	40.00	10.50	9.00	29.63	—
N. E. Dressed Meat & Wool Co., Somerville, Mass.							
S. B. Green & Co.	Watertown	48.07	50.00	14.24	10.00	27.83	—
Park & Pollard Co., Boston, Mass.							
Blue Ribbon ... J. E. Merrick & Co.	Amherst	50.26	45.00	13.33	13.00	29.51	—
Richmond Abattoir, Richmond, Va.							
Rarva ... Lexington Grain Co.	Lexington	83.07	85 00	5.52	7.00	6.07	—
Rarva ... Lexington Grain Co.	Lexington	85.12	85.00	6.21	7.00	3.10	—
N. Roy & Sons, South Attleboro, Mass.							
N. Attleboro Grain Co.	N. Attleboro.	50.26	45.00	11.80	8.00	27.35	—
Whitman & Pratt Rendering Co., Lowell, Mass.							
M. G. Williams	Raynham	46.14	45.00	8.40	10.00	33.31	—
Sanford Winter Co., Brockton, Mass.							
E. C. Packard	Brockton	61.21	50.00	16.27	13.00	12.70	—
Worcester Rendering Co., Auburn, Mass.							
Royal Worcester, Howe Bros.	Gardner	47.80	40.00	10.90	9.00	31.81	—
Royal Worcester, J. W. Doon & Sons Co.	Natick	47.72	40.00	10.34	9.00	31.13	—
Second Grade (below 45% protein)							
Andrews & Spellmen Co., Providence, R. I.							
Star ... Plummer & Jennings Gr. Co.	New Bedford	40.81	30.00	13.09	10.00	31.88	—
Star ... Plummer & Jennings Gr. Co.	New Bedford	40.37	30.00	10.37	10.00	35.07	—
Cyphers Incubator Co., Buffalo, N. Y.							
Cyphers Incubator Co.	Boston	41.42	45.00	9.61	10.00	28.33	—
John C. Dow Co., Boston, Mass.							
G. F. Greene Coal Co.	Campello	42.91	43.00	15.29	12.00	29.66	—
J. B. Garland & Son., Worcester, Mass.							
Garland Fancy .. F. Diehl & Son	Wellesley	40.11	40.00	9.71	10.00	38.35	—
Green Chicken Feed Co., Marblehead, Mass.							
Old Fashioned .. W. B. Herrick	Beverly	36.34	30.00	8.60	5.00	37.21	—
Old Fashioned .. Wilder & Wotton	Lowell	37.48	30.00	8.67	5.00	36.77	—
W. D. Higgins, South Framingham, Mass.							
No. 1 ... C. G. Jordan	Weymouth	42.60	45.00	18.51	12.00	29.81	—
Hinckley Rendering Co., Somerville, Mass.							
J. W. Day & Co.	Lynn	37.48	35.00	13.00	8.00	34.74	—
Mansfield Milling Co.	Mansfield	36.69	35.00	11.31	8.00	36.00	—
A. Culver Co.	Rockland	39.19	35.00	11.48	8.00	32.39	—

MEAT SCRAPS.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Ash.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Geo. E. Marsh Co., Lynn, Mass.							
C. P. Washburn	Middleboro	42.12	40.00	7.85	10.00	38.10	—
I. Morton & Co.	Plymouth	42.64	40.00	9.03	10.00	37.70	—
A. Milot & Son	Taunton	40.28	40.00	7.92	10.00	37.94	—
Portland Rendering Co., Portland, Me.							
M. H. Rolfe Est.	Newburyport	38.26	40.00	9.01	8.00	39.47	—
G. T. Savage Poultry Supply Co., Boston, Mass.							
XXX..........Sumner Crosby & Son	Boston	38.70	45.00	9.13	10.00	40.75	—
XXX..........Sumner Crosby & Son	Boston	42.03	45.00	11.97	10.00	34.80	—
C. M. Shay Fertilizer Co., Groton, Conn.							
Potter Grain Co.	Shelburne Falls	39.93	40.00	11.87	12.00	36.17	—
Springfield Rendering Co., Springfield, Mass.							
Wallace Lord	Athol	44.30	40.00	11.28	8.00	34.37	—
J. A. Torrey, Rockland, Mass.							
No. 1..........A. Culver Co.	Rockland	35.43	40.00	13.30	15.00	35.64	—
No. 1..........A. Culver Co.	Rockland	38.26	40.00	15.00	15.00	32.74	—
Whitman & Pratt Rendering Co., Lowell, Mass.							
Howe Bros.	Gardner	42.78	45.00	9.00	10.00	35.38	—
MEAT AND BONE MEAL.							
American Agri. Chem. Co., Boston, Mass.							
Bradley's.......Sparrow & Co.	Northboro	51.31	30.00	4.95	8.00	43.95	—
Bowker Fertilizer Co., Boston, Mass.							
Bowker's.......G. F. Wetherbee Co.	Gardner	42.73	40.00	8.00	5.00	36.77	—
Bowker's.......A. D. Potter	Orange	39.14	40.00	5.72	5.00	40.05	—
John C. Dow Co., Boston, Mass.							
Favorite........F. O. Andrews	Pepperell	29.59	32.00	11.75	10.00	39.03	—
T. Hersom & Co., New Bedford, Mass.							
Animal Meal....T. Hersom & Co.	New Bedford	34.68	25.00	14.28	5.00	38.04	—
BONE MEAL.							
Beach Soap Co., Lawrence, Mass.							
Granulated.....A. H. Wood & Co.	Framingham	24.34	25.00	10.06	5.00	46.67	—
A. L. Warren, Northboro, Mass.							
Cracked........J. Cushing & Co.	Hudson	27.14	26.00	2.38	1.00	56.78	—
FISH MEAL.							
Joseph Breck & Sons, Boston, Mass.							
John Shine	Dedham	49.48	50.00	1.46	2.00	42.04	—
International Glue Co., Boston, Mass.							
Red Star.......A. Culver Co.	Rockland	43.95	45.00	2.26	2.00	37.75	—
MILK BY-PRODUCT.							
Bent-Croissant Co., Antwerp, N. Y.							
"Milk Albumen" J. W. Day & Co.	Lynn	41.16	43.00	3.93	1.00	25.94	—

ALFALFA AND CLOVER MEAL.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Alfalfa.							
Amendt Milling Co., Monroe, Mich.							
AMCO........G. R. Doane	N. Brookfield	15.15	12.00	1.42	0.50	31.31	33.00
Cyphers Incubator Co., Buffalo, N. Y.							
Cyphers Incubator Co.	Boston	14.63	12.00	1.80	1.00	27.75	30.00
Denver Alfalfa Milling & Products Co., Hartman, Colo.							
M. H. Rolfe Est.	Newburyport	17.34	12.00	1.56	1.50	22.70	35.00
Albert Dickinson Co., Chicago, Ill.							
Bryant & Soule	Middleboro	14.54	12.00	1.46	1.00	29.31	35.00
C. Parkinson	Seekonk	15.50	12.00	1.92	1.00	27.73	35.00
H. C. Puffer Co.	Springfield	13.93	12.00	1.40	1.00	32.05	35.00
Park & Pollard Co., Boston, Mass.							
Mackenzie & Winslow	Fall River	13.75	12.00	1.60	1.50	31.60	30.00
M. C. Peters Mill Co., Omaha, Neb.							
Lucern.........W. J. Meek	Fall River	13.58	12.00	1.37	0.50	33.85	33.00
Lucern.........W. K. Gilmore & Sons	Franklin	15.59	12.00	1.88	0.50	29.54	33.00
Lucern.........G. F. Wetherbee Co.	Gardner	15.33	12.00	1.67	0.50	31.00	33.00
Lucern.........Lexington Grain Co.	Lexington	15.50	12.00	1.44	0.50	30.41	33.00
Lucern.........I. Morton & Co.	Plymouth	15.59	12.00	1.90	0.50	28.51	33.00
Somers & Co., San Francisco, Cal.							
Red Star.......C. B. Sampson	Holyoke	16.03	16.60	1.59	1.40	28.00	29.50
Red Star.......Plummer & Jennings Gr. Co.	New Bedford	18.91	16.60	2.09	1.40	24.50	29.50
Red Star.......Stanley Wood Grain Co.	Taunton	15.59	16.60	1.55	1.40	28.78	29.00
Sperry Flour Co., Stockton, Cal.							
Phillips Bates Co.	Hanover	14.71	14.00	1.26	2.50	27.85	28.50
E. J. Woolworth, Kearney, Neb.							
Butman & Cressey	Lynn	17.34	15.00	1.81	2.50	27.48	27.50
Clover.							
Thos. W. Emerson Co., Boston, Mass.							
Cut Clover.....G. F. Greene Coal Co.	Campello	10.94	7.91	2.23	3.36	23.29	29.84

POULTRY MASH AND MEAL.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein. Found	Protein. Guar.	Fat. Found	Fat. Guar.	Fiber. Found	Fiber. Guar.	Certified Ingredients.
		%	%	%	%	%	%	
Local Mixtures.								
Dry Hen Feed C. S. Barber	Bernardston	21.10	19.00	4.78	4.00	9.72	10.00	Oats, alfalfa, gluten feed, wheat bran, linseed meal, flour middlings, beef scraps.
Berkshire Maine Mash, Berkshire Cl. & Gr.Co	N. Adams	23.64	10.00	5.27	2.50	8.43	5.00	Wheat bran, red dog middlings, corn meal, beef scraps, linseed meal, alfalfa, gluten feed.
Morning Mash Bryant & Soule	Middleboro	16.29	14.00	5.05	5.00	8.02	7.00	Corn meal, wheat bran, ground oats, charcoal, alfalfa, beef scraps.
Perfect Dry Mash J. B. Cover & Co	Lowell	17.16	15.00	4.57	4.00	9.15	10.00	Alfalfa meal, hominy feed, corn meal, wheat mixed feed, animal meal, gluten feed, linseed meal, beef scraps, oats, oat feed.
Perfect Dry Mash J. B. Cover & Co	Lowell	20.40	15.00	3.97	4.00	7.77	10.00	
W. H. C Mash Feed Cunningham Grain Co.	Malden	17.16	13.71	4.71	4.45	7.83	7.18	Alfalfa, wheat middlings, gluten feed, linseed meal. corn meal, beef scraps.
Climax Cream Mash J. W. Day & Co	Lynn	19.70	21.00	4.85	5.00	6.05	7.00	Corn meal, gluten feed, wheat bran, wheat middlings, meat scraps, bone, alfalfa, milk albumen, bone ash, salt.
Climax Grow. Feed, J. W. Day & Co	Lynn	16.78	17.00	4.79	4.50	4.42	4.75	Corn meal, hominy feed, ground oats, wheat bran and middlings, beef scraps, ground bone, fish meal, milk albumen, bone, ash, salt.
Climax Meat Mash, J. W. Day & Co	Lynn	17.95	17.50	3.28	3.50	5.63	8.00	Corn meal, wheat bran and middlings, oats, gluten feed, alfalfa, fish, meat scraps, charcoal, linseed meal, bone ash, salt.
Poultry Mash F. A. Fales & Co	Norwood	18.04	15.00	4.34	4.00	6.17	8.00	Wheat bran and middlings, corn meal, ground oats, gluten feed, alfalfa, beef scraps, fish scraps, linseed oil meal.
Poultry Mash F. A. Fales & Co	Norwood	18.04	15.00	4.20	4.00	6.50	8.00	
Dry Mash John Franks	New Bedford	17.34	18.00	4.56	5.00	12.85	12.00	Oat feed, beef scraps, alfalfa, red dog flour, hominy meal, wheat bran, corn meal.
Garlands Plty. Msh., J. B. Garland & Son	Worcester	24.04	23.00	4.46	4.00	8.30	8.00	Wheat bran and middlings, corn meal, oats, meat scraps, linseed meal, gluten meal, alfalfa.
Garlands Plty. Msh., J. B. Garland & Son	Worcester	24.78	23.00	4.56	4.00	6.75	8.00	
Neponset Plty. Msh. W. K. Gilmore & Sons	Walpole	20.05	14.00	4.88	3.00	10.00	10.00	Wheat bran and middlings, corn meal, ground oats, alfalfa, gluten feed, beef scraps, fish scraps, beet pulp, linseed meal.
Poultry Mash S. B. Green & Co	Watertown	23.38	20.00	4.47	4.00	6.63	7.00	Meat scraps, fish scraps, bran, gluten feed, linseed meal, corn meal, wheat mdlgs., alfalfa.
Poultry Mash S. B. Green & Co	Watertown	23.56	20.00	5.22	4.00	7.36	7.00	
Mash Feed Hingham Grain Mill	Hingham	17.25	15.00	4.58	4.00	9.00	10.00	Wheat bran and middlings, corn meal, ground oats, gluten feed, meat scraps, alfalfa meal.
Mash Feed Hingham Grain Mill	Hingham	19.09	15.00	5.30	4.00	8.69	10.00	
Town Talk Egg Mash. A. E. Lawrence & Son	Ayer	20.14	18.00	5.33	4.00	9.09	12.00	Wheat bran and middlings, corn meal, alfalfa meal, beef scrap, linseed meal, gluten feed.
Alfalfa Plty. Mash Lexington Grain Co	Lexington	21.01	16.00	4.24	3.00	8.34	10.00	Alfalfa meal, meat scraps, fish scraps, corn meal, gluten feed, wheat bran and middlings, grain screenings, salt.
Alfalfa Plty. Mash Lexington Grain Co	Lexington	19.49	16.00	4.05	3.00	10.05	10.00	

POULTRY MASH AND MEAL.—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Lexington Plty. Mash . Lexington Grain Co	Lexington	23.82	18.00	4.63	3.00	7.21	9.00	Meat scraps, fish scraps, gluten feed, linseed meal, alfalfa meal, wheat bran and middlings, corn meal, salt.
Lexington Plty. Mash . Lexington Grain Co.	Lexington	24.83	18.00	4.65	3.00	5.80	9.00	
Meat Mash .... Malden Grain Co	Malden	16.73	10.00	3.40	4.00	6.73	8.00	Meat scraps, corn meal, linseed meal, ground oats, gluten feed, alfalfa, wheat bran and middlings, charcoal, bone meal.
Meat Mash .... Malden Grain Co	Malden	16.03	10.00	4.47	4.00	6.21	8.00	
Mansfield Chick Growing Feed, Mansfield Milling Co.	Mansfield	19.44	17.50	4.08	4.00	6.83	8.00	Wheat bran, red dog flour, corn meal, fish scraps, alfalfa, oat meal, charcoal.
Mansfield Chick Growing Feed, Mansfield Milling Co.	Mansfield	19.18	17.50	4.27	4.00	7.50	8.00	
Mansfield Dry Poultry Mash, Mansfield Milling Co.	Mansfield	22.24	22.00	5.63	6.00	7.53	7.00	Wheat bran and middlings, corn meal, red dog flour, gluten feed, alfalfa, meat scraps.
Mansfield Dry Poultry Mash, Mansfield Milling Co.	Mansfield	22.42	22.00	6.08	6.00	6.65	7.00	
Dry Mash .... Morse Bros	Southbridge	24.26	20.00	2.28	3.00	4.80	12.00	Beef scraps, animal meal, fish scraps, gluten meal, gluten feed, linseed meal, alfalfa, bran, corn meal, ground oats, charcoal.
Reed's Dry Mash . G. H. Reed	S. Acton	21.89	22.00	5.49	5.00	7.80	8.00	Wheat bran and middlings, corn meal, gluten meal, meat scraps, linseed meal, alfalfa.
Ropes' Poultry Hash, Ropes Bros	Salem	17.25	13.00	4.18	4.50	8.00	11.00	Shredded wheat waste, hominy meal, linseed meal, gluten feed, alfalfa meal, wheat mixed feed, bone meal, rolled oats.
Ropes' Poultry Hash, Ropes Bros	Salem	14.01	13.00	3.61	4.50	11.39	11.00	
Ropes' Poultry Hash, Ropes Bros	Salem	17.08	13.00	5.00	4.50	9.11	11.00	
Washburn's Laying Feed, C. P. Washburn	Middleboro	22.07	21.00	4.54	5.00	8.33	12.00	Corn, wheat, Kaffir corn, buckwheat, wheat bran and middlings, oats, alfalfa, beet pulp, linseed meal, fish and meat scrap, peas, beans, lentils, milk by-product, salt, pepper, charcoal.
Growing Feed .... H. K. Webster Co	Lawrence	12.43	10.00	3.50	3.00	5.68	10.00	Wheat feed, rolled oats, gluten meal, Blatchfords calf meal, corn, Hen-E-Ta grits.
Williams' Dry Mash, M. G. Williams	Raynham	23.82	20.00	4.58	4.00	7.08	7.00	Wheat bran, flour, middlings, corn meal, ground oats, linseed meal, beef scrap, gluten feed.
Williams' Dry Mash, M. G. Williams	Raynham	21.98	20.00	4.70	4.00	5.85	7.00	
J. Bibby & Sons, Liverpool, Eng. Bibby's .... J. Loring & Co	Watertown	14.36	12.00	4.18	4.00	7.09	10.00	Corn, middlings, rice polish, sago meal, tapioca meal, peanut cake, palm kernel cake, locust beans, molasses, salt, fennel seed, fenu greek

POULTRY MASH AND MEAL.—*(Continued)*

Manufacturer or Jobber, Brand and Retailer	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Blatchford's Calf Meal Factory, Waukegan, Ill.								
Fill the Basket Egg Mash, W. E. Bryant & Co	Brockton	20.93	19.00	4.67	4.00	8.14	10.00	Blatchfords calf meal, alfalfa, barley, bone, corn meal, oat meal, wheat bran and middlings, beef scraps, fish, capsicum, limestone.
Fill the Basket Egg Mash, S. L. Davenport & Son	N. Grafton	18.83	19.00	4.02	4.00	9.73	10.00	
Fill the Basket Egg Mash, G. H. Reed	S. Acton	18.83	19.00	4.08	4.00	8.50	10.00	
Fill the Basket Egg Mash, H. C. Puffer Co	Springfield	20.93	19.00	3.76	4.00	7.79	10.00	
Milk Mash . . . H. Bruckman	Lawrence	21.19	20.00	4.57	4.00	5.50	7.50	Blatchfords calf meal, barley, bone, corn meal, oat meal, wheat midlgs. beef scraps, fish, limestone.
Milk Mash . . . H. C. Puffer Co	Springfield	23.64	20.00	4.34	4.00	5.55	7.50	
Buffalo Cereal Co., Buffalo, N. Y.								
Poultry Mash . . G. M. Foster Est	Lowell	17.34	15.00	5.15	4.00	5.00	6.00	Corn meal, wheat bran and middlings, hominy feed, gluten feed, oat middlings, rolled oats.
Poultry Mash Plummer & Jennings Gr. Co.	New Bedford	16.55	15.00	5.84	4.00	5.36	6.00	
Poultry Mash . . . A. Culver Co	Rockland	15.15	15.00	4.92	4.00	4.94	6.00	
E. A. Cowee Est., Worcester, Mass.								
Climax Dry Ration . I. J. Rowell	Pepperell	18.91	20.00	4.85	3.50	6.27	10.00	Wheat bran, oats, barley, gluten feed, corn meal, wheat middlings, alfalfa meal, linseed meal, meat and bone meal, fish scrap, salt.
Climax Dry Ration . I. J. Rowell	Pepperell	19.44	20.00	4.47	3.50	5.77	10.00	
Climax Growing Feed, S. L. Davenport & Son	N. Grafton	16.73	14.00	4.43	4.00	7.81	5.00	Wheat bran and middlings, corn, oats, barley, hominy feed, meat and bone meal, salt, locust bean meal, linseed meal.
Climax Growing Feed, I. J. Rowell	Pepperell	15.76	14.00	5.26	4.00	5.57	5.00	
Chas. M. Cox Co., Boston, Mass.								
Wirthmore Mash, All Grain, Eastern Grain Co	Bridgewater	15.68	12.00	3.17	3.00	7.03	9.50	Ground oats, ground barley, gluten feed, alfalfa meal, wheat bran, ground corn, wheat middlings, salt.
Wirthmore Mash, All Grain, H. P. Howland	Spencer	10.85	12.00	2.82	3.00	7.40	9.50	
Wirthmore Mash, All Grain, J. S. Nason & Co	Westboro	16.20	12.00	3.08	3.00	6.89	9.50	
Wirthmore Mash, Fish and Scrap, Plummer & Jennings Gr. Co.	New Bedford	19.61	17.00	7.00	4.00	6.55	9.50	Ground oats, corn and barley, gluten feed, alfalfa meal, wheat bran, beef scraps, fish meal, wheat middlings, salt.
Wirthmore Mash, Fish and Scrap, H. P Howland	Spencer	20.31	17.00	3.15	4.00	6.30	9.50	
Wirthmore Growing Feed, Eastern Grain Co.	Bridgewater	13.58	12.00	3.47	4.00	3.55	4.50	Ground wheat, oats, corn, barley, peas, Kaffir corn and milo maize.
E. Crosby & Co., Brattleboro, Vt.								
Egg Mash . . . . N. Hatfield Grain Co	N. Hatfield	15.68	16.00	4.33	3.00	8.39	10.00	Alfalfa meal, wheat bran and middlings, wheat meal, corn feed meal, corn bran, linseed cake, meat scraps, salt.
Cutler Co., North Wilbraham, Mass.								
King Mash Feed, Pittsfield Grain Co	Pittsfield	18.74	19.00	4.28	4.00	8.64	10.00	(Bean, cocoanut, cottonseed, flaxseed, locust bean, linseed, pea) meals, fenugreek, wheat flour, dried milk, cocoa shells, salt, alfalfa, barley, bone, corn and oat meals, wheat, bran and middlings, beef scraps, fish, capsicum limestone, grit.
King Mash Feed, Cutler Co	W. Brookfield	19.44	19.00	4.07	4.00	9.69	10.00	

POULTRY MASH AND MEAL.—(*Continued.*)

Manufacturer or Jobber. Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar	Found	Guar.	
		%	%	%	%	%	%	
Cyphers Incubator Co., Buffalo, N. Y.								
Fertile Egg Mash . . . Cyphers Incubator Co.	Boston	12.43	10.00	4.13	3.00	5.00	12.00	Corn meal, alfalfa, wheat bran and middlings, ground oats, hemp, millet.
Laying Mash . . . . H. E. Thompson	Plainville	15.41	15.00	3.09	3.00	3.23	6.00	Alfalfa, blood meal, red dog flour, wheat middlings, corn meal, Kaffir corn meal, wheat bran.
Green Chicken Feed Co., Marblehead, Mass.								
5% Meat Mash . . . . . Wilder & Wotton	Lowell	12.74	12.00	6.33	3.00	7.98	7.00	Meat scraps, corn meal, wheat, shell lime, hominy feed, flax screenings, oats, cocoa bran, wheat bran, salt.
5% Meat Mash . . . . . J. W. Doon & Sons	Natick	13.14	12.00	4.61	3.00	7.68	7.00	
5% Meat Mash . . . . . I. J. Rowell	Pepperell	14.10	12.00	6.09	3.00	7.75	7.00	
Hen-E-Ta Bone Co., Newark, N. J.								
Hen-O-La Dry Mash, Ropes Bros.	Danvers	13.23	12.00	3.18	2.00	3.85	4.00	Corn meal, corn gluten feed, wheat middlings, wheat bran, linseed oil meal, Hen-E-Ta grits.
Hen-O-La Dry Mash, Marlboro Grain Co.	Marlboro	12.43	12.00	2.27	2.00	4.84	4.00	
Wm. S. Hills Co., Boston, Mass.								
Purity Growing Feed, C. G. Jordan	Weymouth	21.63	19.00	6.33	6.00	4.73	—	Oat meal, corn meal, hominy meal, wheat middlings. beef scraps, fish meal.
Purity Plty. Mash . M. J. Cahill & Co.	Everett	18.65	17.00	6.12	4.00	6.09	10.00	Beef scraps, linseed meal, alfalfa meal, barley, fish meal, wheat bran, corn meal, cracked corn, ground oats.
Purity Plty. Mash . M. H. Rolfe Est.	Newburyport	19.88	17.00	6.19	4.00	7.00	10.00	
Purity Plty. Mash . A. Culver Co.	Rockland . . .	20.49	17.00	6.86	4.00	6.40	10.00	
Purity Plty. Mash . C. G. Jordan	Weymouth	20.75	17.00	6.93	4.00	6.58	10.00	
Shawmut Plty. Msh. Wilder & Wotton	Lowell	15.33	13.00	6.61	2.00	8.00	12.00	Wheat bran and middlings, animal meat, fish meal, alfalfa, corn, malt sprouts.
Shawmut Plty. Msh. Wilder & Wotton	Lowell	17.08	13.00	5.57	2.00	7.74	12.00	
H-O. Co. Mills, Buffalo, N. Y.								
H-O Poultry Feed . . . G. F. Green Coal Co. . . .	Campello	17.08	17.00	5.72	4.50	7.72	9.00	Ground corn, corn gluten feed, wheat middlings, oat middlings, wheat bran, hominy feed, rolled oats, ground grain screenings, cracked peas.
H-O Poultry Feed . . . Lenox Coal Co.	Lenoxdale	17.78	17.00	4.77	4.50	8.00	9.00	
H-O Dry Plty. Msh. . Beaver Coal & Gr. Co. .	Norwood	19.44	18.00	4.37	3.50	10.04	9.00	Oat middlings, corn gluten feed, wheat bran & middlings, rolled oats, alfalfa meal, ground corn, hominy feed, cracked wheat.
Miner-Hillard Milling Co., Wilkes Barre, Pa.								
Poultry Mash . . . . C. T. Wyman	Hubbardston	15.24	15.00	5.00	5.00	7.80	10.00	Peas, alfalfa meal, oats, wheat middlings, wheat bran, hominy feed, buckwheat middlings, Kaffir corn, sunflower seed, cracked corn, grit, buckwheat, barley.
Mutual Rice Co., New York								
Broken Poultry Rice, A. H. Wood Co.	Framingham . . .	7.97	—	1.34	—	2.50	—	
A. Nowak & Son, Buffalo, N. Y.								
Lay-Egg-O-Day Msh., A. Dodge & Sons Corp	Beverly	13.49	12.00	3.18	3.00	4.37	4.00	Wheat bran and middlings, corn feed meal, corn gluten feed, Hen-E-Ta grits.
Lay-Egg-O-Day Msh., A. Dodge & Sons Corp	Beverly	13.40	12.00	3.37	3.00	4.89	4.00	

POULTRY MASH AND MEAL.—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat		Fiber.		Certified Ingredients.
		Found	Guar	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Park & Pollard Co., Boston, Mass.								
Dry Mash, (Lay or Bust), W. Lord.	Athol	19.44	18.00	3.58	3.50	7.10	12.00	Wheat bran and middlings, corn, wheat, oats, barley, Kaffir corn, buckwheat, alfalfa, fish, meat, bone, beet pulp, calcium carbonate, salt.
Dry Mash, (Lay or Bust), Mackenzie & Winslow	Fall River	20.84	18.00	2.99	3.50	7.60	12.00	
Dry Mash (Lay or Bust), Paul Vigeant	Lowell	24.69	18.00	3.82	3.50	5.35	12.00	
Dry Mash, (Lay or Bust), W. P. Barney	Seekonk	25.66	18.00	4.37	3.50	7.55	12.00	
Growing Feed.......Mackenzie & Winslow	Fall River	16.81	10.00	3.38	3.50	4.29	8.00	Ground corn, wheat, barley, oats, meat, bone, alfalfa, kaffir corn, wheat bran, wheat middlings, buck wheat, beet pulp, calcium carbonate, salt.
M. Mahaney's Turkey Feed, Ropes Bros.	Danvers	14.80	10.00	3.33	3.50	5.78	12.00	Ground wheat, barley, linseed meal, oats, meat, bone, cal. hydroxide, cal. carbonate, salt.
M. Mahaney's Turkey Feed, Glen Mills Cereal Co.	Rowley	16.90	10.00	3.67	3.50	4.70	12.00	
W. N. Potter & Sons, Greenfield, Mass.								
Poultry Mash.......W. N. Potter & Sons Co.	Northampton	19.53	15.00	5.47	4.00	7.00	11.00	Hominy feed, oats, gluten feed, linseed meal, wheat feeds, alfalfa.
Poultry Mash.......A. D. Potter	Orange	19.18	15.00	4.96	4.00	7.00	11.00	
Poultry Mash.......W. N. Potter Grain Co.	Princeton	17.43	15.00	4.82	4.00	9.90	11.00	
Purina Mills, St. Louis, Mo.								
Chicken Chowder...W. E. Bryant & Co	Brockton	19.26	17.00	4.43	3.00	6.94	9.00	Wheat bran and middlings, corn meal, alfalfa, linseed meal, granulated meat, salt, charcoal.
Chicken Chowder...G. H. Parker	Danversport	18.74	17.00	4.66	3.00	6.00	9.00	
Chicken Chowder...Mackenzie & Winslow	Fall River	20.40	17.00	4.28	3.00	7.45	9.09	
Quaker Oats Co., Chicago, Ill.								
American Poultry Food, W. J. Meek	Fall River	13.75	12.00	4.47	3.50	4.32	9.00	Hominy feed, cottonseed meal, ground barley, wheat mixed feed, rye shorts.
Quaker Poultry Mash, W. J. Meek	Fall River	18.56	17.50	6.70	4.00	8.56	10.00	Meat scraps, oat meal, wheat bran, alfalfa meal, hominy feed, gluten feed, ground grain screenings.
Quaker Poultry Mash, W. J. Meek	Fall River	19.61	17.50	6.09	4.00	7.47	10.00	
Quaker Poultry Mash, J. P. Thacher	Littleton	19.18	17.50	6.64	4.00	7.18	10.00	
Quaker Poultry Mash, John S. Wolfe Co.	Pittsfield	19.35	17.50	6.39	4.00	7.94	10.00	
Robin Hood Mills, Ltd., Canada								
Shelled Oats.......Mansfield Milling Co.	Mansfield	14.01	—	7.62	—	1.81	—	
G. T. Savage Poultry Supply Co., Boston, Mass.								
Meat Cereal Mash Feed. Sumner Crosby & Sons	Boston	14.54	11.50	4.90	3.50	10.60	9.32	Corn meal, wheat bran, ground oats, beef scraps, charcoal.
Meat Cereal Mash Feed. Sumner Crosby & Sons	Boston	14.63	11.50	4.54	3.50	9.81	9.32	
Stratton & Co., Concord, N. H.								
Dry Mash.........F. O. Andrews	Pepperell	19.26	18.00	4.26	3.50	10.73	9.00	Oat middlings, gluten feed, wheat middlings, rolled oats, alfalfa, corn, hominy feed, cracked wheat, wheat bran.
Dry Mash.........F. O. Andrews	Pepperell	18.65	18.00	5.14	3.50	10.39	9.00	

DISCUSSION OF THE INSPECTION.

1. Protein Feeds.

Cottonseed Meal and Feed. Pages 6-7. The analysis of the cottonseed meals collected averaged somewhat better than for the preceding year, 50 per cent containing less than 41 per cent protein as compared with 68 per cent for 1914. The average fiber content has been practically the same for the present year and the two preceding years. Manufacturers claim that the gradually increasing fiber content of cottonseed meal has been due to improved methods of separating meat and hulls. In attempting to obtain all of the fine particles of the kernel (in order to increase the amount of oil recovered) more of the hull particles are left with the kernel. While this statement may not be questioned it is also believed that many of the manufacturers standardize their meal with hulls in order to bring it to a more uniform protein content.

Cottonseed meal has long been considered the most economical and satisfactory protein concentrate that the New England dairy farmer could buy, and its value has been set forth by experiment station officials and practical feeders. It is to be hoped that it will not continue to show a gradual decrease in feeding value from year to year as has been noticeable during the past 17 years.

Average Analyses and Retail Prices

	High Grades Choice	Medium Grades Prime and Good	High and Medium Grades
	1913	1913	1913
No. Samples	31	56	87
Protein (per cent)	42.56	38.86	40.18
Fat (per cent)	7.56	7.79	7.71
Fiber (per cent)	7.79	9.90	9.15
Price a ton	$34.47	$34.56	$34.15
	1914	1914	1914
No. Samples	16	34	50
Protein (per cent	42.23	39.26	40.21
Fat (per cent)	7.87	7.50	7.62
Fiber (per cent)	7.84	10.09	9.37
Price a ton	$36.25	$36.13	$36.17
	1915	1915	1915
No. Samples	35	35	70
Protein (per cent)	42.90	39.57	41.23
Fat (per cent)	7.96	7.40	7.68
Fiber (per cent)	8.48	10.62	9.56
Price a ton	$33.16	$33.81	$33.48

But one sample of cottonseed feed meal (mixture of meal and hulls) was collected. It is evidently being impressed upon the minds of Northern feeders that it is not economical for them to pay cottonseed meal prices for cottonseed hulls.

Linseed Meal
Page 8.

The 7 samples of new process and the 22 samples of old process meal collected all maintained their guarantees. The major brand of old process linseed meal, manufactured by the Toledo Seed and Oil Co. ran noticeably lower in protein content than did other brands.

Linseed meal has been shown to have a slightly lower productive value for dairy stock than does cottonseed meal. This fact is also indicated by its lower digestible protein and net energy value. On the other hand its decidedly beneficial effect upon the animal, especially where a heavy grain ration is fed, leads to the conclusion that at the same price it should be considered fully as satisfactory as cottonseed meal in the dairy ration. For fattening stock it has proved to be equal to cottonseed meal.

Average Analyses and Retail Prices.

New Process.

	1912	1913	1914	1915
No. Samples	5	4	2	7
Protein (per cent)	37.10	37.21	36.47	37.05
Fat (per cent)	2.31	2.31	3.77	2.61
Fiber (per cent)	8.29	8.59	8.61	8.75
Price a ton	$41.60	$39.00	$38.50	$39.00

Old Process.

	1912	1913	1914	1915
No. Samples	18	31	25	22
Protein (per cent)	35.61	34.56	33.63	35.35
Fat (per cent)	6.72	6.74	6.98	6.48
Fiber (per cent)	7.45	7.76	8.93	7.86
Price a ton	$43.29	$40.03	$38.02	$38.70

Miscellaneous Oil Cake Meals.
Page 8

Homcoline is the trade name for germ oil meal, (corn germs minus the larger part of the corn oil) manufactured by the American Hominy Company. At the present time (August 1915) it can be purchased at wholesale for about $2.00 a ton less than hominy meal. At such a price it is a very economical and satisfactory feeding stuff.

Peanut Oil Meal (Alpha and Beta brands) is manufactured by the Oil Seeds Company. But one sample of each was found. While peanut oil meal is used extensively in Europe, its use in the United States is limited. Judging from its analysis and appearance it must be an excellent protein concentrate.

Sesame Oil Meal is the residue from the sesame seeds after the mechanical removal of the sesame oil. The one sample collected, as is shown in the table, contained 41.51 per cent protein and 12.26 per cent fat. Both this and the peanut oil meal should prove fully equal in feeding value to cottonseed meal.

Gluten Meal
Page 8.

Gluten meal is particularly rich in protein and relatively low in fat and carbohydrates. It contains more digestible protein than cottonseed meal and at the average price asked must be considered fully as economical a source of protein. It exceeded its protein guarantee by over 5 per cent.

Average Analyses and Retail Prices.

	1913	1914	1915
No. Samples	9	11	10
Protein (per cent)	41.88	41.35	45.85
Fat (per cent)	2.18	1.40	1.34
Fiber (per cent)	2.31	2.28	1.10
Price a ton	$36.00	$37.44	$37.30

Gluten Feed
Page 9.

At present gluten feed is wholesaling at a price which renders it relatively speaking a most economical feeding stuff. The samples collected were of good quality and with the exception of a shortage of fat in a few instances, maintained the guarantees stated.

Average Analyses and Retail Prices.

	1912	1913	1914	1915
No. Samples	30	41	36	22
Protein (per cent)	25.64	25.71	24.94	26.50
Fat (per cent)	2.57	3.24	2.86	2.73
Fiber (per cent)	6.63	6.67	6.68	6.25
Price a ton	$32.86	$31.96	$33.11	$33.71

Distillers' Dried Grains
Pages 9-10.

Practically all of the distillers' grains collected were of the better grades and derived largely from corn. On account of their bulky nature they are used extensively in the compounding of proprietary rations. Dried yeast refuse and other products having the appearance of distillers' grains but of a lower feeding value are said to have been offered as distillers' grains. Such misrepresentation has not as yet been found in Massachusetts. The grains derived from rye have a lower feeding value than those derived from corn and usually sell for a correspondingly lower price.

Average Analyses and Retail Prices.

Corn Distillers' Grains.

	1912	1913	1914	1915
No. Samples	22	34	26	20
Protein (per cent)	30.82	31.04	31.28	30.86
Fat (per cent)	11.64	10.75	10.44	10.55
Fiber (per cent)	10.64	11.37	10.51	10.74
Price a ton	$34.68	$34.53	$34.93	$35.39

Brewers' By-Products Page 10.

Malt Sprouts. Three samples only were collected. Most of them are used as a component of dairy and molasses feeds, hence but few are offered unmixed. They are not very palatable and should be fed mixed with other grains. Because of their capacity to absorb water, if over 2 pounds daily are fed they should be mixed with several times their weight of water.

Brewers' Dried Grains. The sale of Brewers' dried grains has greatly increased during the past year due to the fact that many of the larger local breweries are installing drying plants and also because the normal export demand has been curtailed. For milk production brewers' grains have a feeding value slightly superior to wheat bran. They also have the advantage of being bulky and serve as a distributor for the heavy concentrates. Brewers' grains when fed in reasonable amounts have been found to be a reasonably satisfactory substitute for oats in feeding horses. One-third of the ration may consist of brewers' grains, one-third corn and one-third oats. Owing to the present high price of oats they are worthy of trial by horse owners. It is very important that they be of good quality and free from any mould or rancidity.

Average Analyses and Retail Prices.

Malt Sprouts.

	1912	1913	1914	1915
No. Samples	17	4	8	3
Protein (per cent)	25.94	27.55	26.62	24.14
Fat (per cent)	1.45	1.14	1.28	1.17
Fiber (per cent)	11.19	13.13	12.47	14.24
Price a ton	$26.31	$28.20	$27.21	$30.00

Brewers' Grains.

	1912	1913	1914	1915
No. Samples	3	9	10	17
Protein (per cent)	26.52	25.63	29.13	28.87
Fat (per cent)	5.87	5.93	6.12	6.48
Fiber (per cent)	13.85	13.96	12.35	13.28
Price a ton	$28.33	$29.43	$29.43	$30.50

Wheat By-Products Pages 10-18

The wheat by-products,—red dog flour, wheat middlings, wheat mixed feed and wheat bran,—were of the usual quality. In some instances enough screenings had been added to wheat mixed feed or wheat bran to give the material a decidedly inferior appearance, but in such cases the fact that screenings were present was indicated in the guarantee. Preference should be given to the wheat products that are comparatively free from screenings. The presence of screenings in excessive amounts can be readily detected by the appearance and odor of the product.

Average Analyses and Retail Prices.

Red Dog Flour.

	1915
No. Samples	8
Protein (per cent)	19.46
Fat (per cent)	5.21
Fiber (per cent)	2.79
Price a ton	$37.00

Wheat Middlings.

	1912	1913	1914	1915
No. Samples	38	64	59	58
Protein (per cent)	17.74	17.88	17.84	17.70
Fat (per cent)	5.04	5.17	5.28	5.14
Fiber (per cent)	5.83	5.76	6.25	6.43
Price a ton	$33.66	$32.20	$32.07	$33.31

Wheat Mixed Feed.

	1912	1913	1914	1915
No. Samples	138	184	115	110
Protein (per cent)	16.99	16.91	17.21	17.29
Fat (per cent)	4.59	4.71	4.79	4.87
Fiber (per cent)	7.01	7.27	7.14	7.51
Price a ton	$32.19	$30.73	$30.52	$32.38

Wheat Bran.

	1912	1913	1914	1915
No. Samples	28	57	54	72
Protein (per cent)	16.47	15.86	16.47	16.33
Fat (per cent)	4.28	4.72	4.95	4.67
Fiber (per cent)	8.73	9.48	9.48	9.64
Price a ton	$31.58	$28.18	$28.23	$30.33

Rye Feeds Page 18.

Ten samples of rye feed were collected. With one exception they contained slightly less protein than wheat bran and retailed for about the same price. Rye feeds will probably be found a satisfactory component of the grain ration for hogs.

Wheat Feeds with Admixtures Page 19.

Buckeye Feed is a mixture of wheat and rye products. Its analysis would indicate that it has about the same feeding value as wheat mixed feed.

Holstein Feed, Sterling Feed and Blue Grass Feed are admixtures of wheat products, corn and ground corn cobs. On account of their high fiber content, due to the addition of ground corn cobs, they cannot be considered economical substitutes for wheat bran or wheat mixed feed.

Dairy and Horse Feeds (More than 15 per cent Protein) Pages 19-21

Feeds of this character are intended as a grain ration for either horses or dairy stock. The feeder should ascertain whether under his own conditions it is not possible to mix for himself fully as satisfactory a ration out of the straight by-products at a saving in cost. Those mixtures containing no low-grade by-products are to be preferred. The samples collected were practically as represented.

Molasses Feeds (More than 15 per cent Protein) Pages 21-23.

In many of the feeds in this group molasses is used in the attempt to make some low-grade by-product, such as the refuse from clipped oats, oat hulls or screenings, palatable and salable. Others contain nothing but feeding stuffs of good quality. The mechanical condition, odor and certified ingredients should be considered as well as the chemical composition in purchasing such feeds. Their chief value is as a substitute for wheat bran or other bulky feeding stuffs in the grain ration, providing they can be purchased at a price which will warrant their use.

Calf Meals. Page 23.

The calf meals collected represent the attempt of several manufacturers to formulate satisfactory partial milk substitutes for young calves. The chemical composition of the meals indicates that this attempt has in a measure succeeded, although it is the opinion of the writer that many of them contain substances, that while they do not add materially to the value of the mixtures, do increase the cost. Calf meals cannot entirely take the place of milk for young calves. In order to serve as partial substitutes they should be composed of easily digested grains or by-products and be reasonably rich in protein and fat, and substantially free from fiber. Several of those reported contained more fiber than is desirable.

II. Starchy (Carbohydrate) Feeds.

Meals Made from Cereal Grains. Pages 24-25.

With two exceptions the samples of corn meal, ground oats and rye meal collected were of good quality. Two samples of corn meal had become heated and fermented. Such meal should be used with caution. The best use of sour and fermented meal is probably in the feeding of swine and then only after it has been thoroughly cooked. Experiments appear to demonstrate that the productive value of heated corn or meal is not as great as for corn or meal of good quality.

Wherever possible the cereal grains should be home grown, dependence being placed on the markets for the more concentrated protein feeds. Conditions occur where it may be wise for the farmer to dispose of at least a part of his corn or oats and purchase by-products equally suitable for feeding and at a smaller cost. During the present year the price of whole corn and oats has been out of proportion to the price asked for wheat bran, cottonseed meal, gluten feed hominy feed and other products, and the dairyman effecting such an exchange would be able not only to save money but also to formulate a ration better suited to the production of milk.

Average Analyses and Retail Prices.

Corn Meal.

	1912	1913	1914	1915
No. Samples	53	20	47	31
Protein (per cent)	8.87	9.05	9.47	9.28
Fat (per cent)	3.65	3.78	3.58	3.47
Fiber (per cent)	1.85	2.04	2.22	2.06
Price a ton	$31.44	$25.92	$33.58	$34.81

Hominy Meal. Page 26. Hominy meal may be either yellow or white depending upon the variety of corn from which it is produced. The two are of practically the same feeding value. Hominy feed is fully equal to corn meal in feeding value and may be substituted for it. It is somewhat superior to corn because it is kiln dried, uniformly sweet and of good flavor. During the past year it has ruled lower in price and could be used to advantage as a corn meal substitute.

All the samples examined were of good quality and free from adulteration.

Average Analyses and Retail Prices.

	1912	1913	1914	1915
No. Samples	50	67	62	67
Protein (per cent)	10.78	10.78	11.27	11.16
Fat (per cent)	7.54	7.29	6.96	7.55
Fiber (per cent)	3.68	3.85	4.23	4.39
Price a ton	$33.15	$30.85	$32.91	$33.19

Provender Pages 26-27. Provender is understood locally to be a mixture of corn and oats ground together. Provender is most generally used as a feed for horses. Owing to the prevailing high price for both corn and oats during the past year provender has not proved an economical feeding stuff for either horses or dairy stock.

Dried Beet Pulp. Page 27. The output of dried beet pulp is practically all controlled by the Larrowe Milling Company. The samples collected were as represented. Two samples of dried beet pulp and molasses did not differ materially from the straight product.

The station has issued a special circular on this product. For the best results beet pulp should be fully moistened before feeding.

Oat Feed. Page 27. Oat feed is the residue resulting from the manufacture of cereal breakfast foods from oats. It has a low protein, fat and digestible carbohydrate content and contains a large amount of fiber of low digestibility. More oat feed was found on the market during the present year than for some years past, presumably on account of the high price of other feeding stuffs. Good hay from mixed grasses has a higher feeding value than the average oat feed, and at usual prices it can in no way be considered an economical feed for New England dairy or horse men.

Stock and Horse Feeds. Pages 28-31. Most feeds of this character contain from 400 to 600 pounds of oat feed or other low-grade products and sell for about the same price as the better-grade products with which the low grade material is mixed. The average retail ton price asked for the samples collected was $33.48, while the average price for hominy feed was $33.19. While such feeds cannot usually be considered as satisfactory a source of carbohydrate in the dairy ration as wheat by-products, corn or hominy meal, they do approximate the chemical composition of oats and will often be found economical as a substitute for oats or provender in the feeding of horses.

Molasses Feeds (Less than 15 per cent Protein.) Pages 31-33. Alfalfa mixed with oats, corn or cereal by-products frequently forms the basis of these mixtures. Oat refuse and screenings are less often used than in the molasses feeds containing over 15 per cent of protein. They are extensively sold as horse feeds.

Molassine Meal and Xtravim Feed are both mixtures of molasses and sphagnum moss, the principal difference being that Molassine Meal contains some beet molasses while the Xtravim Feed contains cane molasses only. A discussion of the feeding value of Molassine Meal will be found in Bulletin 158.

III. Poultry Feeds.

Animal Products. Pages 35-36. Owing to the fact that it has been thoroughly demonstrated that fowls do best when a portion of their ration consists of food derived from animal sources, the poultryman must usually look to some of the animal products found on the market for a part of the poultry ration. Meat scraps, meat and bone meal, milk by-products and more recently fish meal are available. As a general rule those products that will furnish the most protein at the smallest cost are the most desirable. Mineral matter can be purchased cheapest in the form of bone or oyster shells. A wide range in protein content is to be noted in the samples collected. Preference should always be given to products free from taint and disagreeable odor.

Fish Meals, a number of samples of which were collected, appear to be growing in popularity as a poultry feed. They are to be commended if free from salt.

Milk Albumen, so-called, is a milk by-product evidently containing a considerable amount of added inorganic matter.

Alfalfa Meals.
Page 37.

Alfalfa meals are extensively used as a substitute for green feed in the poultry ration. The higher the protein and the lower the fiber the more valuable is the product. Poultrymen can frequently provide cheaper sources of green material in the form of dried young clover or lawn clippings, cabbages, sugar beets and mangels.

Poultry Mashes and Meals.
Pages 38-42.

The poultryman who prefers to purchase his feeds ready mixed will have no trouble in making a selection from the large number of brands offered. Preference should be given to those brands that do not contain grits, lime or other inorganic material which can be purchased much cheaper than at grain prices. The large poultryman can usually prepare his own mash cheaper than he can purchase many of the proprietary articles. The samples collected showed a wide range in chemical composition. Our knowledge of poultry nutrients is not sufficient to justify one in making any particularly critical remarks. It may be said in a general way that mixtures containing about 12 to 15 per cent of protein, some 5 per cent of fat and ash, and not over 5 per cent. of fiber, coupled with the desired palatability, should prove satisfactory. When growth and egg production are desired, extra protein and mineral matter must be supplied in the form of animal matter, bone and shells. Special skill in handling the flock is fully as important as the character of the feeds supplied.

COMPLETE FODDER ANALYSES (Averages).

Up to the present time only the protein, fat and fiber determinations have been made on the feeding stuff samples collected, in order to determine if they conformed to their guarantees as required by the Massachusetts feeding stuff law. Owing to the demand for a complete fodder analyses on many of the feeds we have this year made complete analyses in many cases and the results follow. Some feeds manufactured and sold by the retailer are not included as they have simply local interest. Another year, if time permits, these analyses will also be made and published as well as the analyses of some of the more important brands of the straight by-products now included in a general average. It is probably unnecessary to discuss each brand of feed in detail. The purchaser will do well, however, to study the following table in connection with the certified ingredients found in the preceding tables, and compare the data with the prices asked by the retailer.

There is no valid reason why as much should be asked for feeds containing oat hulls, screenings and other low-grade products, as for the straight by-products such as hominy meal, corn meal, cottonseed meal and the like.

The dairyman should consider protein and digestibility as prime factors in the purchase of commercial feeding stuffs:—protein, because the crops ordinarily grown are deficient in this important constituent, and digestibility, because the coarse fodders necessary to ruminants but of low digestibility and rich in fiber can be more cheaply grown on the farm, or if not can be purchased for one-half to two-thirds the price of concentrates.

While we are unable to report on the digestibility of all commercial feeding stuffs, their fiber content is a reasonably good indication of their digestibility, and feeding stuffs containing over 9 or 10 per cent of fiber are to be avoided unless sold at a price commensurate with their true feeding value.

While the horse and growing stock do not have the protein requirements of the milch cow, the preceding remarks in the main hold true where work or growth are the ends sought.

COMPLETE FODDER ANALYSES. (Average.)

No. Samples.	Feedstuff.	Name of Manufacturer.	Water.	Protein.		Fat.		Nitrogen free extract.	Fiber		Ash.
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Oil Cakes.										
35	Choice Cottonseed Meal	All Samples	7.09	42.90	—	7.96	—	27.43	8.48	—	6.14
29	Prime Cottonseed Meal	All Samples	7.11	39.96	—	7.37	—	29.34	10.40	—	5.82
6	Good Cottonseed Meal	All Samples	7.17	37.68	—	7.53	—	30.06	11.78	—	5.78
1	"77" Cottonseed Feed Meal	Humphreys-Godwin & Co.	8.83	21.10	20.00	3.93	4.00	39.46	22.56	28.00	4.12
7	New Process Linseed Meal	All Samples	8.08	37.05	—	2.61	—	37.12	8.75	—	6.39
22	Old Process Linseed Meal	All Samples	8.18	35.35	—	6.48	—	35.42	7.86	—	6.71
1	"Alpha" Peanut Oil Meal	Oil Seeds Co.	4.88	45.53	40.00	9.68	7.00	31.40	3.66	7.00	4.85
1	"Beta" Peanut Oil Meal	Oil Seeds Co	7.52	33.36	30.00	9.03	7.00	37.46	8.40	7.00	4.23
1	Sesame Oil Meal	Oil Seeds Co	6.10	41.51	35.00	12.26	8.00	24.23	4.90	10.00	11.00
2	Homcoline, Corn Germ Meal	American Hominy Co	4.13	20.36	17.00	8.47	5.00	54.59	4.34	7.00	8.11
	Gluten Meal and Feed.										
10	Diamond Gluten Meal	Corn Products Refining Co.	8.08	45.85	40.00	1.34	1.50	42.53	1.10	4.00	1.10
22	Gluten Feed	All Samples	8.61	26.50	—	2.73	—	52.07	6.25	—	3.84
	Brewers' & Distillers' By-Products.										
20	Corn Distillers' Grains	All Samples	5.83	30.86	—	10.55	—	39.20	10.74	—	2.82
3	Malt Sprouts	All Samples	7.42	24.14	—	1.17	—	47.52	14.24	—	5.51
17	Brewers' Dried Grains	All Samples	5.74	28.87	—	6.48	—	42.41	13.28	—	3.22
	Wheat By-Products.										
8	Red Dog Flour	All Samples	9.72	19.46	—	5.21	—	59.32	2.79	—	3.50
58	Wheat Middlings, Flour and Standard	All Samples	9.34	17.70	—	5.14	—	56.77	6.43	—	4.62
110	Wheat Mixed Feed	All Samples	8.86	17.29	—	4.87	—	56.14	7.51	—	5.33
72	Wheat Bran	All Samples	8.13	16.33	—	4.67	—	54.65	9.64	—	6.58
	Wheat By-products with Admixtures.										
6	Buckeye Feed (Wheat and Rye Feeds)	Quaker Oats Co	9.10	17.15	15.50	4.76	4.50	55.96	7.62	8.50	5.41
8	Wheat Feeds with Corn & Cob Meal	All Samples	7.57	10.17	—	3.04	—	58.56	16.46	—	4.20

COMPLETE FODDER ANALYSES. (Average.)—(*Continued*)

No. Samples	Feedstuff	Name of Manufacturer.	Water.	Protein.		Fat.		Nitrogen free extract.	Fiber.		Ash.
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Dairy and Horse Feeds.										
	(Containing more than 15% protein)										
1	Bibby's Dairy Feed	J. Bibby & Sons	9.22	22.51	18.00	6.98	6.00	42.53	10.76	11.00	8.00
3	Bibby's Horse Feed	J. Bibby & Sons	9.03	21.04	18.00	7.10	6.00	44.12	10.87	11.00	7.84
3	Creamery Feed	Buffalo Cereal Co.	7.45	20.46	18.00	5.58	4.00	50.57	11.02	9.00	4.91
9	Unicorn Dairy Ration	Chapin & Co.	6.72	26.96	26.00	5.93	5.50	44.88	10.44	10.00	5.07
4	Wirthmore Balanced Ration	Chas M. Cox Co.	7.54	27.89	25.50	5.22	6.50	44.83	9.13	8.50	5.39
2	Crosby's Ready Ration	E. Crosby & Co.	7.10	26.75	25.00	6.40	7.00	46.12	9.19	9.00	4.44
1	Dewey's Ready Ration	Dewey Bros Co.	7.48	26.44	25.00	6.95	7.00	43.81	10.65	9.00	4.67
8	Larro Feed	Larrowe Milling Co.	7.59	21.12	19.00	4.03	3.00	51.44	11.25	14.00	4.57
1	Mingo Feed	Larrowe Milling Co.	8.39	26.44	25.00	4.04	4.00	42.89	12.50	12.00	5.74
8	Union Grains	Ubiko Milling Co.	7.03	24.87	24.00	5.69	7.00	47.62	9.00	9.00	5.79
	Molasses Feeds.										
	(Containing over 15% protein.)										
4	Sucrene Dairy Feed	American Milling Co	11.72	16.15	16.50	5.02	3.50	47.40	11.50	12.50	8.21
9	Cloverleaf Dairy Feed	Cloverleaf Milling Co.	12.56	17.12	16.50	3.85	3.50	44.85	12.45	12.00	9.17
1	H. & S. Alfalfa Feed	Dwight E. Hamlin	12.80	19.50	20.00	4.20	3.50	44.92	12.35	16.00	6.23
3	H. & S. Horse, Mule and Dairy Feed	Dwight E. Hamlin	12.58	16.24	14.00	3.56	3.50	49.17	12.75	16.00	5.70
1	Algrane Milk Feed	H-O Co.	11.40	15.45	14.00	3.91	4.00	49.50	12.81	10.00	6.93
1	International Dairy Feed	International Sugar Feed Co.	11.88	18.94	18.00	5.98	5.00	44.40	11.72	12.00	7.08
2	International Special Dairy Feed	International Sugar Feed Co.	13.56	15.27	15.00	4.62	4.50	46.62	12.12	12.00	7.81
2	Cream-O-Lene Dairy Ration	A. Nowak & Son	12.17	19.33	20.00	4.53	4.00	49.48	8.18	9.00	6.31
3	Blue Ribbon Dairy Feed	Quaker Oats Co.	11.44	25.01	25.00	3.65	3.50	43.19	10.75	12.00	5.96
1	Daisy Dairy Feed	Quaker Oats Co.	10.55	16.06	16.00	4.74	4.00	50.01	12.02	14.50	6.62
1	Quaker Dairy Feed	Quaker Oats Co.	11.07	16.09	16.00	4.82	4.00	49.71	11.41	14.50	6.90
3	Purina Cow Chow Feed	Ralston Purina Co.	10.84	24.57	24.00	4.94	5.00	40.15	13.37	12.00	6.13
6	Protena Dairy Feed	Ralston Purina Co.	13.09	16.68	16.50	4.20	3.50	46.33	11.21	12.00	8.49
4	Purina Dairy Feed	Ralston Purina Co.	11.94	20.21	20.00	3.58	3.80	41.99	15.19	15.00	7.09
5	Hammond Dairy Feed	Western Grain Products Co	11.22	16.99	16.50	4.55	3.50	46.05	12.16	11.00	9.03

COMPLETE FODDER ANALYSES. (Average.)—(*Continued.*)

No. Samples	Feedstuff	Name of Manufacturer.	Water.	Protein.		Fat.		Nitrogen free extract.	Fiber.		Ash.
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Rye Feeds.										
10	Rye Feed	All Samples	9.11	15.13	—	3.19	—	64.62	4.04	—	3.91
	Calf Meals.										
1	Bibby's Calf Feed and Regulator	J. Bibby & Sons	8.95	16.03	14.00	15.45	14.00	48.07	5.44	7.00	6.06
2	Blatchford's Calf Meal	Blatchford's Calf Meal Factory	10.42	24.91	24.00	4.95	5.00	48.56	6.03	6.75	5.13
2	Cloverleaf Calf Meal	Cloverleaf Milling Co	9.49	26.62	25.00	5.39	6.00	47.38	5.65	7.00	5.47
1	Schumacher Calf Meal	Quaker Oats Co.	6.75	18.21	19.00	8.41	8.00	61.38	1.93	3.00	3.32
1	Ryde's Cream Calf Meal	Ryde & Co	11.30	23.82	25.00	4.68	5.00	51.03	4.50	6.00	4.67
2	Sugarota Calf Meal	Sugarota Calf Meal Co	9.83	26.86	25.00	5.69	6.00	49.25	4.82	6.00	3.55
	Cereal Meals.										
31	Corn Meal	All Samples	12.65	9.28	—	3.47	—	71.29	2.06	—	1.25
1	Rye Meal	All Samples	9.84	10.68	—	1.96	—	73.81	1.83	—	1.88
8	Ground Oats	All Samples	9.08	12.24	—	5.06	—	61.46	8.84	—	3.32
	Hominy Feed.										
8	Yellow Hominy Feed	All Samples	10.18	10.81	—	7.55	—	64.87	4.29	—	2.30
59	White Hominy Feed	All Samples	8.88	11.21	—	7.55	—	65.56	4.40	—	2.40
15	Provender (Corn and Oats)	All Samples	10.36	10.72	—	4.39	—	66.50	5.39	—	2.64
	Miscellaneous Feeds.										
8	Dried Beet Pulp	All Samples	7.85	9.26	8.00	0.79	0.50	60.58	18.59	20.00	2.93
2	Dried Beet Pulp with Molasses	Larrowe Milling Co.	7.68	8.49	9.00	0.86	0.50	61.57	18.05	18.00	3.35
10	Oat Feed	All Samples	6.01	5.03	—	2.25	—	53.55	27.00	—	6.16
2	Bibby's Pig Meal	J. Bibby & Sons	8.94	13.34	12.00	4.51	4.00	54.81	10.09	10.00	8.31
2	Dried Grains (Mellin's Food Refuse)	A. H. Brown & Bros.	6.30	12.09	10.00	4.21	2.50	57.91	15.42	20.00	4.07
2	Ground Corn Cobs	K. & E. Neumond	6.96	2.67	1.90	0.65	0.38	56.28	31.77	30.50	1.67

COMPLETE FODDER ANALYSES. (Average.)—(*Continued.*)

No. Samples	Feedstuff.	Name of Manufacturer.	Water.	Protein.		Fat.		Nitrogen free extract	Fiber.		Ash.
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Stock and Horse Feeds.										
4	Horse Feed	Buffalo Cereal Co.	6.20	12.56	10.00	4.87	4.00	62.90	9.66	9.00	3.81
3	Iroquois Stock Feed	Buffalo Cereal Co.	8.90	10.23	10.00	6.39	4.00	61.12	9.61	9.00	3.75
5	Steam Cooked Feed	Buffalo Cereal Co.	9.17	10.35	8.00	5.34	4.00	64.76	7.31	9.00	3.07
2	Stock Feed	Buffalo Cereal Co.	8.50	10.51	8.00	6.24	4.00	61.25	9.67	9.00	3.83
1	Chesbro Stock Feed	Chesbro Milling Co.	7.20	9.81	8.00	5.51	3.25	62.10	11.50	10.00	3.88
3	Corno Horse and Mule Feed	Corno Mills Co.	9.95	10.85	10.00	3.84	3.50	56.56	14.45	12.00	4.35
2	Charlestock Feed	Chas M. Cox Co.	7.00	7.62	6.00	3.24	3.00	64.84	13.43	16.00	3.87
8	Wirthmore Stock Feed	Chas M. Cox Co.	8.61	10.55	9.00	6.71	4.00	63.16	7.69	9.50	3.28
1	Crosby's Stock Feed	E. Crosby & Co.	7.05	10.07	9.00	6.67	4.00	62.43	10.28	10.00	3.50
4	Elmore Stock Feed	Elmore Milling Co.	7.32	10.37	10.00	4.86	5.00	60.13	12.49	16.00	4.83
2	Red Tag A. Chop Feed	J. B. Garland & Son	8.83	12.05	7.00	5.23	3.00	58.94	10.58	14.00	4.37
2	Red Tag B. Chop Feed	J. B. Garland & Son	7.85	9.90	7.00	4.18	3.00	60.03	13.43	16.00	4.61
4	Grandin's Stock Feed	D. H. Grandin Milling Co.	7.02	9.74	8.50	6.90	3.50	61.86	10.52	10.00	3.96
5	Haskell's Stock Feed	W. H. Haskell & Co.	7.80	10.32	8.00	7.35	4.00	62.82	7.85	8.00	3.86
1	Purity Stock Feed	Wm. S. Hills Co.	6.37	11.82	10.00	5.86	3.25	61.17	9.45	9.00	5.33
4	New England Stock Feed	H-O Co	8.62	9.74	9.00	4.59	4.00	62.23	9.71	10.00	5.11
3	Imperial Steam Cooked Feed	Imperial Grain & Milling Co.	9.44	10.19	9.50	4.66	4.00	70.47	3.48	4.00	1.76
1	C. O. &. B Feed	Imperial Grain & Milling Co.	8.33	9.37	8.90	3.41	3.70	65.32	11.35	11.95	2.22
2	M. &. S Stock Feed	Meech & Stoddard	7.46	9.72	9.00	6.69	3.00	62.46	10.45	12.00	3.22
5	Stock Feed	Park & Pollard	7.50	10.14	9.00	4.39	3.00	59.87	13.27	12.00	4.83
2	Boss Feed	Quaker Oats Co.	9.91	8.67	8.00	3.31	3.00	65.87	9.22	12.00	3.02
3	Schumacher Feed	Quaker Oats Co.	8.27	11.09	10.00	3.91	3.25	63.08	10.17	10.00	3.48
1	Schumacher Special Horse Feed	Quaker Oats Co.	9.37	10.07	9.25	3.63	3.25	66.93	7.16	8.00	2.84
2	Sterling Feed	Quaker Oats Co.	8.88	10.86	10.00	4.36	3.25	63.22	9.17	10.00	3.51
2	Victor Feed	Quaker Oats Co.	8.13	9.15	8.00	4.88	3.00	63.78	10.63	12.00	3.43
3	White Diamond Feed	Quaker Oats Co	9.72	8.61	8.00	3.91	3.25	67.58	8.06	9.00	2.12
1	New Hampshire Stock Feed	Stratton & Co.	11.85	10.68	10.00	3.95	4.00	66.73	4.54	6.00	2.26
2	Stratton Stock Feed	Stratton & Co.	8.59	10.29	9.00	5.01	4.00	61.57	9.93	9.00	4.61
1	Syragold Stock Feed	Syracuse Milling Co.	8.00	7.88	7.50	3.25	3.00	61.05	13.55	12.00	6.27
2	Very Best Stock Feed	F. F. Woodward & Co.	7.87	10.51	8.50	6.13	3.50	63.67	8.32	10.00	3.50

COMPLETE FODDER ANALYSES. (Average.)—(*Continued.*)

No. Samples	Feedstuff	Name of Manufacturer.	Water.	Protein.		Fat.		Nitrogen free extract.	Fiber.		Ash.
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Molasses Feeds.										
	(Less than 15% protein.)										
1	Butterfat Dairy Feed	Mineeda Mills Co.	14.74	14.31	15.00	2.37	3.50	45.76	12.73	13.50	10.09
1	Sucrene Horse and Mule Feed	American Milling Co.	12.96	10.83	10.00	2.45	2.50	55.08	12.93	12.00	5.75
2	Cloverleaf Horse Feed	Cloverleaf Milling Co.	16.38	9.61	10.00	1.97	2.00	56.52	10.47	12.00	5.05
1	Green Meadow Alfalfa Feed	Dwight E. Hamlin	17.39	10.00	9.00	2.17	2.00	53.22	11.25	10.00	5.97
1	Purekane Molasses Feed	Dwight E. Hamlin	15.89	8.80	5.00	2.42	1.50	59.38	7.05	8.00	6.46
2	Algrane Horse Feed	H-O Co.	10.16	11.61	11.00	4.01	4.00	58.92	10.47	10.00	4.83
1	Trojan Horse Feed	Meader Atlas Co.	15.91	14.04	12.00	3.19	3.00	55.22	7.39	8.00	4.25
2	Molassine Meal	Molassine Co. of America	16.97	8.99	7.00	0.53	0.50	59.43	6.18	7.00	7.90
2	Molasco Feed	National Oats Co.	13.38	10.21	8.50	3.02	2.50	55.60	12.61	12.00	5.18
2	Vim-O-Lene Horse Feed	A. Nowak & Son	13.92	10.03	8.00	3.76	2.00	63.47	5.45	9.00	3.37
1	Cream Alfalfa Dairy Feed	Omaha Alfalfa Milling Co.	14.94	9.56	11.00	1.35	10.78	59.14	10.78	15.00	4.23
1	Green Meadow Dairy Feed	Omaha Alfalfa Milling Co.	28.60	8.08	11.00	0.49	1.00	41.31	15.59	25.00	5.93
1	Peerless Horse Feed	Omaha Alfalfa Milling Co.	13.65	10.15	10.00	2.42	2.00	60.29	9.22	12.00	4.27
3	Arab Horse Feed	M. C. Peters Mill Co.	15.04	10.57	9.00	2.46	2.00	57.01	9.96	15.00	4.96
1	June Pasture Feed	M. C. Peters Mill Co.	16.20	12.07	10.00	0.96	0.50	42.34	20.10	26.00	8.33
2	King Corn Feed	M. C. Peters Mill Co.	14.12	10.07	9.00	1.97	1.50	53.83	13.79	18.00	6.22
2	Repeter Horse Feed	M. C. Peters Mill Co.	17.31	9.78	9.00	2.08	1.50	55.54	10.43	18.00	4.86
4	Green Cross Horse Feed	Quaker Oats Co.	13.58	9.54	10.00	2.48	2.50	59.91	9.81	12.00	4.68
5	Purina Feed with Molasses	Ralston Purina Co.	13.49	9.43	9.30	2.67	1.70	59.67	9.77	11.70	4.97
1	Purina O-Molene	Ralston Purina Co.	13.35	10.35	8.25	3.08	2.50	58.18	9.88	9.00	5.16
1	Economy Horse Feed	Somers & Co.	15.90	3.21	9.50	2.09	2.10	55.29	12.03	9.10	6.48
1	Green Pasture Stock Feed	Somers & Co.	17.06	10.28	9.50	1.12	4.00	46.67	16.50	14.50	8.37
1	Sweetened Cocoanut Meal	Western Grain & Sugar Products Co.	17.28	10.49	11.00	1.74	3.50	58.33	3.35	5.50	8.81
4	Xtravim Feed	Xtravim Molasses Feed Co.	19.37	4.89	4.61	0.56	0.81	62.77	5.03	4.50	7.38
	Poultry Feeds.										
17	Alfalfa Meal	All Samples	6.62	15.47	—	1.63	—	38.77	28.96	—	8.55
1	Cut Clover	Thos. W. Emerson Co.	8.15	10.94	7.91	2.23	3.36	43.79	23.29	29.84	11.60
1	Bibby's Poultry Feed	J. Bibby & Sons	11.32	14.36	12.00	4.18	4.00	56.50	7.09	10.00	6.55

COMPLETE FODDER ANALYSES. (Average.)—(*Continued.*)

No. Samples	Feedstuff.	Name of Manufacturer.	Water.	Protein.		Fat.		Nitrogen free extract.	Fiber.		Ash.
				Found	Guar.	Found	Guar.		Found	Guar.	
	Poultry Feeds. (*Continued.*)			%	%	%	%	%	%	%	%
4	Fill the Basket Egg Mash	Blatchford's Calf Meal Factory	9.50	19.98	19.00	4.16	4.00	50.28	8.54	10.00	7.64
2	Milk Mash	Blatchford's Calf Meal Factory	8.50	22.42	20.00	4.46	4.00	46.24	5.53	7.50	12.85
3	Poultry Mash	Buffalo Cereal Co.	8.42	16.35	15.00	5.30	4.00	61.47	5.10	6.00	3.36
2	Climax Dry Ration	E. A. Cowee Est.	8.38	19.18	20.00	4.66	3.50	53.44	6.03	10.00	8.31
2	Climax Growing Feed	E. A. Cowee Est.	8.15	16.25	14.00	4.85	4.00	59.16	6.69	5.00	4.90
3	Wirthmore Mash, All Grain	Chas. M. Cox Co.	10.17	14.24	12.00	3.02	3.00	61.74	7.11	9.50	3.72
2	Wirthmore Mash, Fish and Scrap	Chas. M. Cox Co.	10.47	19.96	17.00	5.05	4.00	50.79	6.43	9.50	7.30
1	Wirthmore Growing Feed	Chas. M. Cox Co.	9.32	13.58	12.00	3.47	4.00	65.85	3.55	4.50	4.23
1	Crosby's Egg Mash	E. Crosby & Co.	8.53	15.68	16.00	4.33	3.00	58.85	8.39	10.00	4.22
2	King Mash Feed	Cutler Co.	9.75	19.09	19.00	4.18	4.00	48.31	9.17	10.00	9.50
1	Fertile Egg Mash	Cyphers Incubator Co.	7.26	12.43	10.00	4.13	3.00	67.18	5.00	12.00	4.00
1	Laying Mash	Cyphers Incubator Co.	11.14	15.41	15.00	3.09	3.00	64.23	3.23	6.00	2.90
3	Green's 5% Meat Mash	Green Chicken Feed Co.	7.97	13.33	12.00	5.68	3.00	45.44	7.83	7.00	19.75
2	Hen-O-La Dry Mash	Hen-E-Ta Bone Co.	6.67	12.83	12.00	2.73	2.00	47.95	4.35	4.00	25.47
1	Purity Growing Feed	Wm. S. Hills Co.	9.27	21.63	19.00	6.33	6.00	46.89	4.73	—	11.15
4	Purity Poultry Mash	Wm. S. Hills Co.	7.82	19.94	17.00	6.52	4.00	49.24	6.52	10.00	9.96
2	Shawmut Poultry Mash	Wm. S. Hills Co.	8.56	16.22	13.00	6.09	2.00	55.04	7.87	12.00	6.22
2	H-O Poultry Feed	H-O Co.	8.82	17.43	17.00	5.25	4.50	56.39	7.86	9.00	4.25
1	H-O Dry Poultry Mash	H-O Co.	7.80	19.44	18.00	4.37	3.50	53.48	10.04	9.00	4.87
1	Miner-Hillard Mash	Miner-Hillard Milling Co.	8.71	15.24	15.00	5.00	5.00	56.23	7.80	10.00	7.02
1	Broken Poultry Rice	Mutual Rice Co.	11.50	7.97	—	1.34	—	72.36	2.50	—	4.33
2	Lay-Egg-O-Dry Mash	A. Nowak & Son	8.02	13.45	12.00	3.28	3.00	48.22	4.63	4.00	22.40
4	Dry Mash (Lay or Bust)	Park & Pollard	8.35	22.66	18.00	3.69	3.50	46.57	6.90	12.00	11.83
1	Growing Feed	Park & Pollard	8.80	16.81	10.00	3.38	3.50	58.59	4.29	8.00	8.13
2	Margaret Mahaney's Turkey Food	Park & Pollard	8.18	15.85	10.00	3.50	3.50	58.06	5.24	12.00	9.17
3	Chicken Chowder	Purina Mills	8.49	19.47	17.00	4.46	3.00	53.56	6.80	9.00	7.22
1	American Poultry Feed	Quaker Oats Co.	9.46	13.75	12.00	4.47	3.50	65.02	4.32	9.00	2.98
3	Quaker Poultry Mash	Quaker Oats Co.	8.39	19.12	17.50	6.44	4.00	52.77	7.74	10.00	5.54
1	Shelled Oats	Robin Hood Mills, Ltd.	10.48	14.01	—	7.62	—	64.27	1.81	—	1.81
2	Meat Cereal Mash Food	G. T. Savage Poultry Supply Co.	8.05	14.59	11.50	4.72	3.50	55.90	10.22	9.32	6.52
2	Stratton's Dry Mash	Stratton & Co.	8.41	18.96	18.00	4.70	3.50	53.15	10.56	9.00	4.22

FEEDING STANDARDS AND THE DAIRY COW.

What was probably the first attempt at formulating a rational feeding standard for farm stock was in 1810, when Thaer, the father of German agriculture, introduced what was known as "hay equivalents" in which various feeding stuffs were compared with hay as a standard. The chemical composition of feeding stuffs was imperfectly known and no comparison on the basis of chemical composition could be made. Later Grouven formulated standards based upon chemical composition, and it was not until 1864, as a result of the work of Henneberg and others that Wolff based standards upon chemical composition and digestibility.

The more recent Wolff-Lehmann standard for a 1000-pound cow giving 22 pounds of milk daily requires the following pounds of nutrients:

Dry Matter	*Digestible Nutrients*			*Nutritive Ratio*
	Protein	*Carbohydrates*	*Fat*	
29	2.5	13.0	0.5	1:5.7

Up to the present time the Wolff-Lehmann method of figuring rations has been generally taught in our agricultural schools.

More recently, however, various investigators have recognized that there were certain factors which had not been considered in this method of formulating rations. Haecker of the Minnesota station, after a long series of experiments, concluded that the amount of nutrients needed depended not only upon the size of the animal and quantity of milk produced, but also upon the quality of the milk, and has published tables giving the amount of nutrients necessary for cows producing milk of varying richness, also taking into consideration the weight of the animal and amount of milk produced.

Kellner, of Germany, and Armsby, of Pennsylvania, have approached the problem from a somewhat different standpoint. They have shown that the value of a feedstuff is measured not only by its composition and digestibility, but also by the loss of energy employed in the processes of mastication, digestion and assimilation. The total energy in a feedstuff minus the energy thus used has been termed by Armsby net available energy.

Kellner uses as a unit for measuring net available energy one pound of digestible starch, and the values of other feedstuffs as compared with this unit are expressed in terms of "starch equivalents."

Armsby expresses the net available energy in therms, one therm being 1000 Calories.

Both Kellner and Armsby have deduced methods for formulating rations on the basis of digestible protein and net available energy. These methods will probably be generally adopted as more expermental data is secured.

It has been assumed that to a certain extent, the animal is a machine in which definite combinations of nutrients known as feeding standards should be supplied without taking into consideration the individuality of the animal nor the particular character of the feedstuffs making up the different rations. The best that any such system will produce is average results.

Palatability, variety and the effect of food when fed in different combinations should also be considered. The importance of variety in a ration may have a chemical significance. For instance, we are only at the beginning of our knowledge of the specific nutritive effect of the different proteins; the protein from one cereal may have a greater feeding value than that from another. Again, one feeding stuff may contain substances not now known to be necessary for the well-being of the animal; hence, the importance of variety and the advisability of combining a number of feeding stuffs in the ration.

There are also economic factors which may lead the feeder to vary more or less from any accepted standard. Where milk or cream must necessarily be sold at a low figure, it may be good business policy for the farmer to use largely of those feeding stuffs that he can produce even though they may not be the best suited for a maximum milk production.

The object of this article is not to give in detail the various methods of figuring rations, for which the reader is referred to special articles and bulletins, but to call attention to the fact that the study of the principles of nutrition has been progressive, and that we may still be only at the beginning of our knowledge of the subject. It is certain that feeding practice based on any standard, be it Wolff-Lehmann, Haecker, Armsby or any of their modifications, will yield more satisfactory results than where no attention is paid to our present knowledge of scientific feeding.

The assertion sometimes made that much of the work already accomplished is worthless and should be cast aside, is not true. It is not only of practical value but will serve as steppingstones for future investigators working to increase our knowledge of the rational feeding of farm animals.

INFORMATION OF INTEREST TO DAIRYMEN.

By J. B. LINDSEY.

1. *Composition of Cattle Feeds.*

All cattle feeds, whether in the form of grains and their by-products, or as hay, corn silage and straw, are composed of the following groups of substances:

Water—The several grains and their by-products contain from 7 to 12 per cent of water; hay and straw, 12 to 16 per cent; field-cured corn stover, 30 to 40 per cent; and corn silage, 76 to 80 per cent.

Ash represents the mineraling redients, and constitutes the ashes after the feed is burned. These ashes consist of lime, potash, soda, magnesia, iron, phosphoric and sulfuric acids.

Protein is a collective name for all of the nitrogenous matter: it corresponds to the lean meat in the animal, and may be termed "vegetable meat." It has the same elementary composition as animal flesh. When fed to animals as a component of the various feedstuffs, it serves as the exclusive source of flesh as well as a source of heat or energy and fat.

Crude fiber or cellulose is the coarse or woody part of the plant. It may be called the plant's framework. It is a source of heat or energy and fat.

Non-nitrogenous extract matter represents the sugars, starch and gums. It is the principal source of heat or energy and animal fat.

Fat includes not only the various oils and fats in all grains and coarse fodders, but also waxes, resins and coloring matters. It is frequently termed *ether extract*, because it is that portion of the plant soluble in ether. It serves as a source of heat or energy and fat in the body of the animal.

Carbohydrates is a term which is generally used to include both the fiber and the non-nitrogenous extract matter.

It will thus be seen that all of the several groups of nutrients—protein, carbohydrates and fat—are sources of energy; that is they furnish the food or fuel to maintain the life of the body. They also are convertible into fat. The protein, however (including the ash), is the only group from which the animal can make its flesh or lean meat. In order to form the bones all the groups are used.

2. *Digestibility of Cattle Feeds.*

The several groups of nutrients above described, which make up the various cattle feeds, are valuable to the animal only in so far as they can be digested and assimilated. The concentrated feeds are considerably more digestible than the coarse fodders, as a single illustration will show.

	100 Pounds Timothy Hay			100 Pounds Gluten Feed		
	Composition	Per Cent Digestible	Pounds Digestible	Composition	Per Cent Digestible	Pounds Digestible
Water	15.0	—	—	8.5	—	—
Ash..............	4.3	—	—	1.7	—	—
Protein..........	6.3	48	3.0	26.2	85	22.3
Fiber....	28.4	58	16.5	7.2	76	5.5
Extract Matter...	43.6	63	27.5	53.3	89	47.4
Fat	2.4	61	1.5	3.1	83	2.6
Total........	100.0	—	48.5	100.0	—	77.8

In the first and fourth columns is given the composition of average samples of timothy hay and of gluten feed. In the second and fifth columns are shown the percentages of the different groups which are digestible. Thus, of the 6.3 pounds of protein in timothy, 48 per cent are digestible, or 3 pounds; and of the 26. 2 pounds of protein in 100 pounds of gluten feed, 85 per cent or 22.3 pounds, are digestible. Excluding the ash, which is not generally taken into account, it is shown that 100 pounds of timothy hay contain about 48 pounds of digestible or actual food material, and 100 pounds of gluten feed 78 pounds. It is evident, therefore, that the gluten feed is decidedly more valuable as a source of nutrition than the timothy hay.

3. *Method of Measuring the Efficiency of Feeding Stuffs.*

The digestibility of a feed, however, is not the true measurement of its nutritive value, for the reason that some feeds require more energy for their digestion than others. What is termed *net energy value*, expressed in the form of Calories[1] or therms,[1] represents more accurately the true nutritive values of feeding stuffs.

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[1] A large Calorie represents the amount of heat necessary to raise 1 Kilogram of water 1° Centigrade. It is the unit of heat measurement. A therm represents the amount of heat required to raise 1000 kilograms of water 1° Centigrade.

Explanation. The entire amount of heat or energy contained in a feeding stuff is termed its *total heat* or *energy* value. All of this heat or energy cannot be utilized by the animal for the purposes of maintaining its body in a state of temperature equilibrium, or for aiding in the production of growth and milk. The several losses may be enumerated as follows: (*a*) the undigested material, *i. e.*, the faeces; (*b*) the incompletely used material (urea, etc.) of the urine; (*c*) the work required in the processes of digestion and assimilation in preparing the nutrients so that they can be used for maintenance and for the production and growth of milk. These several sources of loss expressed as energy, deducted from the total energy, leave the real or *net energy value.*

Here follows a table showing the *relative* net energy values (relative values) of a few of the more important feeding stuffs. Instead of expressing the relative energy values in therms of energy, they are stated on the basis of 100 for the sake of direct comparison. The figures were secured by the use of the so-called Kellner method[1]. They are not perfect, but represent the results of the best method that we have available at this time. Corn meal is taken as 100 and the other feeds, both concentrated and coarse, are compared with it.

Relative Values of Feeding Stuffs.

Corn meal,	100
Apple pomace,	11
Beet pulp (dried).[2]	69
Brewers' dried grains,	66
Brewers' wet grains,	18
Buckwheat middlings,	90
Corn bran,	78
Corn silage,	12
Corn stover, from field,	27
Corn stover, very dry,	36
Cottonseed meal,	95
Distillers' dried grains, largely from corn,	94
Gluten feed,	91
Gluten meal,	99
Hay, alfalfa or clover,[3]	42
Hay, barnyard millet,	36
Hay, English (mixed grasses), fine early cut,	43
Hay, Kentucky blue grass,	41
Hay, orchard grass,	38
Hay, red top,	43
Hay, rowen,	48
Hay, swamp or swale,	23
Hay, tall oat grass,	36
Hay, timothy,	36
Hominy meal,	105
Linseed meal (old process),	94
Malt sprouts,	66
Oats, ground,	83
Rye feed,	91
Wheat bran,	57
Wheat kernels, red,	92
Wheat kernels, white,	94
Wheat middlings (flour),	98
Wheat middlings (standard)	67

It should be borne in mind that the above figures express only net energy and not protein value. If protein is needed to balance the ration, it can be purchased most economically in the high-grade protein concentrates, such as cottonseed meal, gluten feed, distillers' dried grains and the like.

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[1] For a full explanation of the components of the animal body, the composition of feeds, the different ways in which the food is used in the animal body, and the explanation for using the therm in the calculation of rations for farm animals, see Farmers' Bulletin 346, United States Department of Agriculture, prepared by H. P. Armsby.

[2] Our own experiments, comparing beet pulp with corn meal, as components of a dairy ration, have shown their feeding values to be more nearly equal.

[3] Alfalfa probably preferable, especially as source of protein.

4. *Nutritive Ratio of Cattle Feeds.*

The *numerical* relation which the digestible protein bears to the other digestible organic nutrients (fiber, extract matter and fat[1]) is termed the nutritive ratio of the feed or ration. Timothy hay has, for example, 3 parts of digestible protein to 47.3 parts of other digestible nutrients, or as 1 is to 15.8. This is termed a very wide nutritive ratio. Gluten feed contains 22.3 parts of digestible protein to 58.6 parts of other digestible nutrients or as 1 is to 2.6. This may be termed a very narrow nutritive ratio or proportion. All feeds having a nutritive ratio of 1 to 5 or less may be said to have narrow ratios, those from 1 to 5 to 1 to 8 a medium ratio, and above 1 to 8 a wide ratio.

The cereals and other non-leguminous coarse fodders have medium to wide ratios, and the leguminous coarse fodders, medium ratios and the leguminous seeds and most concentrated by-products narrow ratios.

5. *Combining Coarse and Concentrated Feeds (Balanced Rations.)*

Desirable rations for dairy stock should possess (*a*) palatability, (*b*) sufficient bulk, and (*c*) 1 part of protein to 5.5 to 7 parts of the other digestible organic nutrients. If the ratio is much narrower than 1 to 5.5, the ration is likely to be too stimulating for continuous feeding, and the animal is likely to become thin in flesh. If the ratio is much wider than 1 to 7, the tendency will be for the animal to put on fat rather than to give milk. In both cases the ration may be said to be *out of balance.*

For both economical and physiological reasons it is necessary that a considerable portion of the daily ration of the dairy animal should be composed of coarse fodder or roughage, because such materials are easily and cheaply produced on the farm, and because the digestive tract of the bovine is especially suited to utilize them. Most of these home-grown coarse feeds, however, are very high in carbohydrates, low in protein, and have a relatively low digestibility. It is necessary, therefore, to supplement them to an extent with the cereal grains, which, though relatively low in protein, are very digestible; and with the concentrated by-products which in addition to a relatively high digestibility, are quite rich in protein. A single illustration will make this clear. Many experiments have demonstrated that a 1,000-pound cow, producing daily 10 quarts of milk of average quality, needs approximately the following amounts of *digestible* nutrients:

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[1] The fat is converted into the energy equivalent of the starch or fiber by multiplying by 2.2; thus, 3 per cent of fat would have an energy equivalent of 6. 6 percent or parts of starch

Digestible	Protein	Fat	Carbohydrates	Total	Nutritive Ratio
Pounds,	2.25	.5	13 or 13.5	16	1 to 6.4

Now if this animal were fed daily as much of an *extra* quality of hay as she would consume (28 to 30) pounds, she would receive:

Digestible	Protein	Fat	Carbohydrates	Total	Nutritive Ratio
Pounds,	1.3	.3	13	14.6	1 to 10.5

Such a ration is deficient both in total digestible nutrients as well as in digestible protein. If 7 pounds of the hay were replaced by an equal amount of corn meal, the hay and corn meal would furnish:

Digestible	Protein	Fat	Carbohydrates	Total	Nutritive Ratio
Pounds,	1.4	.47	14.35	16.22	1 to 11

The corn meal being very digestible, but a one-sided or starchy feed, would sufficiently increase the total digestible nutrients, but not the protein. If 4 pounds of corn meal were replaced by 2 pounds of bran and two pounds of cottonseed meal, the several feeds would supply:

Digestible	Protein	Fat	Carbohydrates	Total	Nutritive Ratio
Pounds,	2.07	.60	13.20	15.87	1 to 6.4

The replacing of 7 pounds of hay with 3 pounds of corn meal rich in digestible matter and with 2 pounds each of bran and cottonseed meal especially rich in digestible protein, furnishes a ration containing less fiber and more starchy matter and protein than is contained in the hay. Such a ration contains the requisite amount of both total digestible matter and digestible protein, and may be said to be *properly balanced.**

6. *Types of Balanced Rations.*

Because of the high prices usually prevailing for all concentrated feeds, dairymen are frequently in doubt as to the kinds to be selected and the amount to be fed in order to secure the best returns for the money invested. Farmers selling cream to the creamery, or located where there is not a quick demand for milk, probably will not find it economical to feed over 3 to 5 pounds of purchased grain daily, and will use maximum amounts of home-grown hay and silage (1 bushel of silage and what hay the animal will eat clean). If the silage is well eared, 1½ pounds each of cottonseed meal and flour middlings, sprinkled over the silage to distribute it, will produce a fairly well-balanced ration, and prove helpful in maintaining the milk flow. If corn meal is a home product rather than silage, mix by weight 1-4 bran, 1-2 corn and cob meal and 1-4 cottonseed meal, (100 pounds bran, 200 pounds corn and cob meal and 100 pounds cottonseed meal), and feed 5 to 6 quarts daily, or by weight 2-3 corn and cob meal and 1-3 cottonseed meal and feed 4 to 5 quarts daily, together with one feeding of cut or shredded corn stover and what hay the animal will clean up.

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*Instead of expressing the nutrients needed by different animals in the forms of protein, fat and carbohydrates, it is believed we shall soon be using the terms protein and therms of net energy. Thus a cow of 1000 pounds producing 20 pounds of milk daily, will require 2 pounds of protein and 12 therms of energy. A circular on this subject may be published before long.

Producers of market milk generally find it advisable to feed somewhat more grain, and a number of combinations are suggested which will produce satisfactory balanced rations when fed with what hay the animal will eat clean (18 to 24 pounds a day), or with 1 bushel of corn silage and 10 to 16 pounds of hay.

I.

100 pounds bran,
100 pounds flour middlings,
100 pounds gluten feed,
Mix and feed 6 to 8 pounds (7 to 9 quarts) daily.

II.

100 pounds bran,
100 pounds corn or hominy meal,[1]
100 pounds cottonseed meal,
Mix and feed 6 to 8 pounds (7 to 9 quarts) daily.

III.

100 pounds wheat bran,
200 pounds gluten feed,
25 pounds cottonseed meal,
Mix and feed 7 pounds (7 quarts) daily.

IV.

100 pounds wheat bran or malt sprouts,
100 pounds corn or hominy meal,
150 pounds gluten feed,
Mix and feed 7 pounds (or quarts) daily.

V.

75 pounds wheat bran,
150 pounds corn and cob meal,
100 pounds cottonseed meal,
Mix and feed 6 to 7 pounds (or quarts) daily.

VI.

100 pounds distillers' grains,
100 pounds malt sprouts,
150 pounds corn meal,
50 pounds cottonseed meal,
Mix and feed 7 pounds (7 to 8 quarts) daily.

VII.

150 pounds distillers' grains,
150 pounds standard middlings,
100 pounds corn or hominy meal,
Mix and feed 7 pounds (or quarts) daily.

VIII.

150 pounds wheat bran,
200 pounds gluten feed,
Mix and feed 7 pounds (8 to 9 quarts) daily.

IX.

200 pounds dried brewers' grains,
100 pounds corn meal,
50 pounds cottonseed meal,
Mix and feed 7 pounds (9 quarts) daily.

X.[2]

300 pounds bran,
100 pounds flour middlings,
100 pounds corn meal,
100 pounds ground oats,
300 pounds gluten feed,
100 pounds linseed meal,
Mix and feed as desired.

XI.

1.5 pounds gluten feed,
1.5 pounds cottonseed meal,
4.0 pounds dried beet pulp.[3]

XII.

3 pounds distillers' grains,
4 pounds dried beet pulp.

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[1] Corn and cob meal, if on hand, can be used in place of corn and hominy meal.

[2] Ration designed for cows on test; rather expensive for ordinary purposes.

[3] Beet pulp should be moistened with two to three times its weight of water before feeding.

The cost of a pound of the several mixtures is likely to vary from 1.5 to 1.7 cents. It is believed that the above selections are more economical on the basis of their content of nutritive material than many of the sugar feeds and other proprietary mixtures.

In general it may be said that the *amount of grain* to be fed daily depends (*a*) upon the size of the cow, (*b*) daily milk yield, and (*c*) the local market value of the milk. The richer the milk, the more food is required to produce a given amount; and *vice versa*.

Six to seven pounds of the above mixtures is a fair average amount for cows weighing 800 to 900 pounds, which are yielding 10 quarts of 4 to 5 per cent milk. For every 2 quarts of milk yielded in excess of this amount the grain ration may be increased by 1 pound.

7. *Rations for Young Stock.*

Young dairy stock may receive 1 peck or more of silage daily, depending upon their size, in addition to what hay, corn stover or other coarse fodder they will eat clean; or the entire roughage may consist of hay. Ten to 15 pounds of roots daily in cases where silage is not available will prove appetizing and helpful. Grass and clover rowen form a very desirable feed for growing animals. In addition to the above, it is usually advisable to feed from 1 to 3 pounds daily of a grain mixture reasonably rich in protein and ash.[1] Any of the above grain mixtures will prove satisfactory. The writer has found mixtures by weight of 1-2 bran, 1-4 corn meal and 1-4 flour middlings; or 1-2 bran, 1-4 corn meal and 1-4 ground oats quite satisfactory. A ration composed of late cut hay and corn meal would not be desirable, it lacking both flesh and bone forming material (protein and ash).

Several months before the heifer freshens it is well, if circumstances permit, to increase the grain ration to 5 or 6 pounds per day in order to get her accustomed to grain and to encourage a large future milk flow.

The feeder will do well to bear the following in mind:

1. Late-cut hay is noticeably less nutritious than early-cut.

2. Fine grasses are more nutritious than the coarse.

3. The clovers and alfalfa should be cut in early bloom. If cut in late bloom their nutritive value is noticeably lessened.

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[1] If the roughage consists largely of grass or clover rowen, 2 pounds daily of a mixture of bran and corn meal, or even of corn meal alone, will prove satisfactory.

4. Concentrated feeds, aside from their palatability, should be purchased for their high digestibility or net energy value and protein content.

5. The cereals have a high net energy value; cottonseed meal, gluten feed, distillers' dried grains and flour middlings, while they are highly digestible (high net energy value) are purchased as a rule because of their protein content.

6. Wheat bran is an expensive source of nutrition, but its bulk and laxative qualities frequently commend its use to eastern feeders in amounts not exceeding 25 to 30 per cent of the entire grain ration.

7. Some proprietary grain mixtures are fairly economical; others, which contain low-grade by-products, are quite expensive, due to the fact that such feed mixtures are sold at about the same prices as the high-grade concentrates.

8. The farm is the carbohydrate factory. As a rule, it is not practicable for the farmer or dairyman to produce all of the high-grade protein feeds to supplement his home-grown carbohydrates. He should endeavor to produce as much as possible of the needed protein in the form of clover, alfalfa, peas and possibly soy beans. In some cases he will find it necessary to purchase corn and the like, but this is not advised whenever it can be grown upon the farm.

MARKET PRICES OF COMMERICAL FEEDSTUFFS FOR 1914-1915.

(BOSTON RATE)

FEEDSTUFFS	Average Monthly Wholesale Ton Prices—1914–1915.												Average
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	
Cottonseed Meal	$29.84	$28.57	$28.29	$29.55	$29.85	$33.42	$32.45	$32.25	$32.21	$31.25	$31.40	$31.25	$30.86
Linseed Meal (N. P. & O. P.)	33.78	32.56	34.00	36.75	39.25	39.82	38.50	34.63	33.25	32.30	34.01	36.53	35.45
Gluten Feed (Sacked)	32.47	28.71	31.15	31.48	32.00	32.53	28.83	27.94	27.88	28.25	28.31	28.75	29.86
Gluten Feed (Bulk)	29.72	27.40	29.70	29.74	30.32	30.91	27.58	26.33	26.33	27.08	27.22	27.73	28.34
Distillers' Dried Grains	—	34.50	34.50	35.50	36.00	—	36.00	34.00	34.00	—	35.00	—	34.94
Malt Sprouts	—	—	—	—	—	—	—	—	—	—	—	—	—
Flour Middlings (Red Dog)	34.10	33.13	34.06	35.80	37.96	35.50	32.85	33.81	33.63	35.55	37.19	37.00	35.05
Standard Middlings	28.58	26.38	27.60	28.28	29.57	29.78	27.93	29.19	28.94	29.18	31.22	31.57	29.02
Mixed Feed	29.38	27.38	28.19	28.78	30.57	30.72	28.95	29.75	29.26	29.15	29.94	30.19	29.36
Bran, Spring	25.75	23.75	25.38	26.30	27.94	28.06	25.95	27.13	25.06	25.05	25.44	25.44	25.94
Bran, Winter	25.33	23.88	25.56	26.55	28.19	28.44	26.45	27.31	25.56	25.25	25.44	25.50	26.12
Hominy Meal (Sacked)	32.30	28.74	28.86	29.22	31.34	32.09	30.03	30.61	32.28	31.54	31.61	33.15	30.98
Hominy Meal (Bulk)	31.40	27.28	27.26	27.62	29.82	30.53	28.80	29.48	30.90	29.36	30.65	—	29.37
Corn Meal	34.20	32.00	32.20	29.60	31.20	32.90	31.40	32.20	32.40	31.80	33.40	34.40	32.31
Corn, No. 2, yellow	32.03	30.00	30.71	27.85	29.43	31.46	30.28	30.85	31.28	30.13	31.82	33.58	30.79
Oats, No. 2, clipped white	35.94	34.63	35.63	35.44	38.13	42.06	41.13	41.25	38.75	35.75	39.88	41.31	38.33
Rye, No. 2	35.46	34.64	36 42	40.00	43.57	49.99	45.71	44.46	44.82	45.17	43.21	39.46	41.91
Feed Barley (standard)	30.79	28.50	29.88	30.00	33.34	37 92	35.63	34.79	35.21	33.13	—	—	32.92
Hay, No. 1, large bales	21.47	21.34	21.51	21.25	21.57	21.19	22.25	22.57	23.13	23.70	26.76	28.04	22.90
Hay, No. 2, large bales	19.80	19.63	19.88	19.25	19.65	19.07	20.30	20.38	21.13	21.90	24.75	24.73	20.87
Hay, No. 1, clover mixed	18.15	17.75	18.01	17.60	17.50	17.50	17.50	17.50	18.07	19.00	19.94	21 53	18.34
Straw, choice rye	15.75	15.50	15.34	15.15	15.50	15.25	15.30	15.25	15.63	15.85	15.53	15.00	15.42
Straw, oat	10.10	10.00	10.00	9.93	10.00	10.00	9.95	9.19	9.19	9.25	8.88	8.00	9.54

CONTROL SERIES. BULLETIN NO. 4. DECEMBER, 1915.

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

INSPECTION OF Commercial Fertilizers

BY

H. D. HASKINS, L. S. WALKER, C. P. JONES and W. S. FROST.

This bulletin gives a detailed report of the fertilizer inspection for 1915. It states the number of fertilizers inspected, gives trade values of fertilizer ingredients, provides a summary showing average composition of unmixed fertilizing material as well as pound cost of each element of plant food furnished. Special attention is called to commercial shortages existing in both unmixed fertilizing materials and mixed goods. Particular emphasis is laid upon the economy of purchasing only high grade fertilizers. A summary table shows the general standing of each manufacturer's brands. A discussion is made of the quality of plant food found present in the mixed goods. A summary table shows the general quality of nitrogen found in each manufacturer's product. Mention is made of the number and nature of the lime products analyzed. A brief explanation of a vegetation experiment is made to show the efficiency of the alkaline permanganate method as an indication of the activity of water insoluble organic nitrogen. Tables of analyses give the detailed composition of all fertilizers and lime products sold in the state. Commercial valuations of the plant food in all fertilizing materials, calculated from the table of trade values, are published, and for the lime compounds, the actual cost of 100 pounds of calcium and magnesium oxide is given in each case.

Requests for bulletins should be addressed to the
AGRICULTURAL EXPERIMENT STATION,
AMHERST, MASS.

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†In administrative charge.

DEPARTMENT OF CHEMISTRY.

J. B. Lindsey, *Chemist.*

INSPECTION OF COMMERCIAL FERTILIZERS

FOR THE SEASON OF 1915.

By H. D. Haskins, *Chemist in Charge.*
Assisted by
L. S. Walker, C. P. Jones and W. S. Frost.

Manufacturers and Brands.

During the season of 1915, 112 manufacturers, importers and dealers, including the various branches of the American Agricultural Chemical Company have secured certificates for the sale of 501 different brands of fertilizer, agricultural chemicals, raw products and agricultural limes in the markets of Massachusetts. They may be classed as follows:

Complete fertilizers	345
Fertilizers furnishing phosphoric acid and potash	9
Ground bone, tankage and dry ground fish	51
Chemicals and organic nitrogen compounds	67
Agricultural limes	29
	501

Following will be found an alphabetical list of those who have registered fertilizers and lime compounds for sale in the state during 1915, together with brands registered by each.

W. H. Abbott, Holyoke, Mass.

Abbott's Animal Fertilizer,
Abbott's Eagle Brand Fertilizer,
Abbott's Onion Brand,
Abbott's Tobacco Fertilizer.

Alphano Humus Co., Whitehall Building, New York City.

Prepared Alphano Humus.

American Agricultural Chemical Co., 92 State St., Boston, Mass.

A. A. C. Co. Grass and Oats,
A. A. C. Co. Top Dresser,
Bradley's Corn Phosphate,
Bradley's Eclipse Phosphate,
Bradley's Extra Complete Manure,
Bradley's Potato Fertilizer,
Bradley's Revised High Grade Potato and Root Special,
Bradley's Special Niagara Phosphate,
Bradley's Special Potato Manure,
Bradley's Special High Grade Fertilizer,
Bradley's Special Complete Manure for Potatoes and Vegetables,
Bradley's Special Complete Manure for Corn and Grain,
Bradley's Special Complete Manure for Top Dressing Grass and Grain,
Bradley's Special English Lawn Fertilizer,

Bradley's XL Superphosphate of Lime,
Church's Special Fish and Potash D,
Clark's Cove Bay State Fertilizer,
Clark's Cove Bay State Fertilizer GG,
Clark's Cove Potato Fertilizer,
Clark's Cove Special Great Planet Manure AA,
Clark's Cove Special Potato Manure,
Darling's Animal Fertilizer,
Darling's Farm Favorite,
Darling's Special Blood, Bone and Potash,
Darling's Special Complete Manure,
Darling's Special General Fertilizer,
Darling's Special Potato Manure,
East India A A Ammoniated Superphosphate,
Farquhar's Fine Ground Bone,
Farquhar's Special Lawn and Garden Dressing,
Farquhar's Special Vegetable and Potato Fertilizer,
Great Eastern Potato Manure,
Great Eastern Revised Garden Special,
Great Eastern Revised Northern Corn Special,
Great Eastern Revised General,
Soluble Pacific Guano,
Pacific Potato Special,
Pacific Special High Grade General Fertilizer,
Packer's Union Special Animal Corn Fertilizer,
Packer's Union Special Potato Manure,
Packer's Union Special Universal,
Quinnipiac Corn Manure,
Quinnipiac Phosphate,
Quinnipiac Potato Phosphate,
Quinnipiac Special Market Garden Manure,
Quinnipiac Special Potato Manure,
Read's Farmer's Friend Superphosphate,
Read's Practical Fertilizer,
Read's Special High Grade Farmer's Friend Superphosphate,
Read's Special Vegetable and Vine Fertilizer,
Standard Fertilizer,
Standard Guano,
Standard Special Complete Manure,
Standard Special for Potatoes,
Wheeler's Corn Fertilizer,
Wheeler's Cuban Tobacco Grower,
Wheeler's Potato Manure,
Wheeler's Special Havana Tobacco Grower,
Williams & Clark's Americus Ammoniated Bone Superphosphate,
Williams & Clark's Americus Corn Phosphate,
Williams & Clark's Americus High Grade Special for Potatoes and Root Crops,
Williams & Clark's Americus Potato Manure,
Williams & Clark's Royal Bone Phosphate,
Williams & Clark's Special Potato Phosphate,
Williams & Clark's Special Prolific Crop Producer,
Basic Lime Phosphate,
Complete Fertilizer for Orchards and Small Fruits,
Dissolved Bone Black,
Dry Ground Fish,
Extra Special Grass and Garden Mixture,
Fine Ground Bone,
Fine Ground Nova Scotia Plaster,
Ground Tankage (4.94%),
Ground Tankage (7.41%),
Ground Untreated Phosphate Rock,
Grass and Lawn Top Dressing,
High Grade Dried Blood,
Nitrate of Soda,
Plain Superphosphate (14%),
Plain Superphosphate,
Sulphate of Ammonia,
Special Complete Tobacco Manure,
Special High Grade Fertilizer,
Special A A Potato Grower,
Valley Special Complete Fertilizer.

Armour Fertilizer Works, 930 Equitable Building, Baltimore, Md.

Ammoniated Bone with Potash,
All Soluble,
Bone Meal,
Fish and Potash,
Grain Grower,
3—8—3,
4—8—3,
5—4—3,
5—8—4,
5—8—3,

Baltimore Pulverizing Company, Baltimore, Md.

Market Garden Fertilizer.

Baugh & Sons Co., Philadelphia, Pa.

Baugh's Complete Animal Base Fertilizer,
Baugh's Grand Rapid High Grade Guano,
Baugh's High Grade Potato Grower.

Beach Soap Co., Lawrence, Mass.

Advance,
Fertilizer Bone,
Lawn Dressing,
Market Garden,
Reliance,
Top Dressing.

Berkshire Fertilizer Co., Bridgeport, Conn.

Berkshire Ammoniated Bone Phosphate,
Berkshire Complete Fertilizer,
Berkshire Complete Tobacco Fertilizer,
Berkshire Dry Ground Fish,
Berkshire Economical Grass Fertilizer,
Berkshire Fish and Potash,
Berkshire Grass Special,
Berkshire Long Island Special,
Berkshire Potato and Vegetable Phosphate,
Berkshire Tobacco Special, Potash as Sulfate.

Berkshire Hills Co., Sheffield, Mass.

Agricultural Lime.

Charles M. Bolles, East Pepperell, Mass.

Nissitissitt Plant Food.

Boston Humus Co., Boston, Mass.

Boston Humus,
Boston Plant Life.

Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.

Bowker's Acid Phosphate,
Bowker's All Round Fertilizer,
Bowker's Ammoniated Food for Flowers,
Bowker's Basic Lime Phosphate,
Bowker's Blood, Bone and Potash (Revised),
Bowker's Brighton Phosphate,
Bowker's Corn Phosphate,
Bowker's Dried Blood,
Bowker's Dry Ground Fish,
Bowker's Farm and Garden Phosphate,
Bowker's Fine Ground Bone Tankage,
Bowker's Fine Ground Nova Scotia Land Plaster,
Bowker's Fresh Ground Bone,
Bowker's High Grade Fertilizer,
Bowker's High Nitrogen Mixture,
Bowker's Hill and Drill Phosphate,
Bowker's Lawn and Garden Dressing (Revised),
Bowker's Nitrate of Soda,
Bowker's Potato and Vegetable Fertilizer,
Bowker's Potato Phosphate,
Bowker's Pulverized Sheep Manure,
Bowker's Pure Unleached Canada Hardwood Ashes,
Bowker's Special Complete Alkaline Tobacco Grower,
Bowker's Sulfate of Ammonia,
Bowker's Square Brand Fertilizer,
Bowker's Sure Crop Phosphate,
Stockbridge Cereal Manure,
Stockbridge Early Crop Manure,
Stockbridge General Crop Manure.

Joseph Breck & Sons Corporation, 51-52 North Market St., Boston, Mass.

Breck's High Grade Wood Ashes,
Breck's Market Garden Manure,
Breck's Ram's Head Brand Sheep Manure,
Breck's Special Lawn and Garden Dressing.

F. W. Brode & Co., 40 S. Front St., Memphis, Tenn.

Owl Brand Cottonseed Meal.

Edward Bryant Co., Boston, Mass.

Lime and Wood Ashes.

The Buckeye Cotton Oil Co., Cincinnati, Ohio.

"Buckeye" Cottonseed Meal.

Carters Tested Seeds Inc., Boston, Mass.

Carters Anti-Clover Manure, No. 2,
Carters Complete Grass Manure, No. 1,
Carters General Purposes Manure, No. 3,
Carters Worm Eradicating Fertilizer.

Cheshire Lime Manufacturing Co. Cheshire, Mass.

Cheshire Agricultural Lime,
Cheshire Ground Limestone.

The E. D. Chittenden Co., Bridgeport, Conn.

Chittenden's Complete Tobacco and Onion Grower,
Chittenden's Dry Ground Fish,
Chittenden's Fine Ground Bone,
Chittenden's Fish and Potash Special Formula,
Chittenden's Grain and Vegetable,
Chittenden's Grass and Grain,
Chittenden's Potato and Grain,
Chittenden's Potato Special,
Chittenden's Tobacco Special.

Clay & Sons, Stratford, London, Eng.

Clay's Fertilizer.

The Coe-Mortimer Co., 51 Chambers St., New York City.

E. Frank Coe's Alkaline Phosphate and Potash (Special),
E. Frank Coe's Basic Fruit and Legume Phosphate (Basic Lime Phosphate), (Key-Plow Brand),
E. Frank Coe's Blood, Bone and Potash, (Special),
E. Frank Coe's Blue Brand Excelsior Guano,
E. Frank Coe's Columbian Corn and Potato Fertilizer (Special),
E. Frank Coe's Double Strength Potato Manure (Special),
E. Frank Coe's Double Strength Top Dressing Manure (Special),
E. Frank Coe's Excelsior Potato Fertilizer (Special),
E. Frank Coe's High Grade Ammoniated Superphosphate (Special),
E. Frank Coe's High Grade Soluble Phosphate,
E. Frank Coe's Ideal Tobacco Fertilizer (Special),
E. Frank Coe's Ideal Tobacco Fertilizer (Special) with Carbonate,
E. Frank Coe's New Englander Special (Revised),
E. Frank Coe's Prize Brand Grain and Grass Fertilizer,
E. Frank Coe's Prolific Crop Producer,
E. Frank Coe's Reliable Crop Grower (Special),
E. Frank Coe's Special Grass Top Dressing (Revised),
E. Frank Coe's Standard Potato Fertilizer (Special),
E. Frank Coe's XXV Ammoniated Phosphate,
Fine Ground Bone,
Ground Tankage (6 & 30),
Ground Tankage (9 & 20),
High Grade Dried Blood,
Nitrate of Soda.

F. E. Conley Stone Co., Utica, N. Y.

Raw Ground Limestone.

J. A. Creighton & Co., Thomaston, Maine.

Land Lime.

S. P. Davis, Little Rock, Ark.

Good Luck Brand Cottonseed Meal.

Dexter Lime Rock Co., Lime Rock, R. I.

Ground Limestone,
Slaked Lime.

John C. Dow Co., 13-14 Chatham St., Boston, Mass.

Dow's Pure Ground Bone.

The Eastern Chemical Co., 37 Pittsburg St., Boston, Mass.

I M P Plant Food.

The Edison Pulverized Limestone Co., Stewartsville, N. J.

Edison Pulverized Limestone.

Essex Fertilizer Co., 39 North Market St., Boston, Mass.

Essex Complete Manure for Corn, Grain and Grass,
Essex Complete Manure for Potatoes, Roots and Vegetables,
Essex Fertilizer for Top Dressing and Lawns,
Essex Grain, Grass and Potato Fertilizer,
Essex Ground Bone,
Essex Market Garden and Potato Manure,
Essex New Tobacco Fertilizer,
Essex Special Corn Fertilizer,
Essex Special Potato Phosphate,

Essex XXX Fish and Potash for All Crops,
Nitrate of Soda.

R. & J. Farquhar & Co., Boston, Mass.

Purity Brand Pulverized Sheep Manure.

Farnam Cheshire Lime Co., Farnams, Mass.

Agricultural Lime.

German Kali Works, New York City.

Kainit,
Muriate of Potash,
Sulfate of Potash.

John Glennie, Ward Hill, Mass.

Complete Fertilizer.

The Grangers Lime & Marble Co., West Stockbridge, Mass.

Ground Limestone.

Charles W. Hastings, Stoughton, Mass.

Ferti-Flora.

Thomas Hersom & Co., New Bedford, Mass.

Hersom's Neverfail,
Pure Bone Meal,
Meat and Bone.

A. W. Higgins, Westfield, Mass.

Acid Phosphate,
Ammo-Phos,
Carbonate of Potash,
Castor Pomace,
Cottonseed Meal,
Cyanamid,
Dry Ground Fish,
Nitrate of Soda.

Home Soap Co., Worcester, Mass.

Pure Ground Bone.

The Hoosac Co., North Adams, Mass.

Ground Limestone.

Hoosac Valley Lime & Marble Co., Adams, Mass.

Adams Agricultural Lime,
Adams Lime Kiln Ashes.

Hudson Carbon Co., Ballston Spa, N. Y.

Davidge's Special Phosphorus.

Humphreys-Godwin Co., Memphis, Tenn.

Dixie Brand Cottonseed Meal,
Dixie Brand Cottonseed Meal (7.50% Nitrogen),
Forfat Brand Cottonseed Meal,
Topsy Dark Cottonseed Meal.

International Agricultural Corporation, (Buffalo Fertilizer Works, Branch), Buffalo, N. Y.

Buffalo Bone Meal,
Buffalo Farmers' Choice,
Buffalo Five-Eight-Four,
Buffalo High Grade Manure,
Buffalo New England Special,
Buffalo Onion and Fruit Formula,
Buffalo One-Eight-Two,
Buffalo Tobacco Producer,
Buffalo Three-Eight-Four,
Buffalo Top Dresser,
Buffalo Vegetable and Potato,
Lime Carbonate.

John Joynt, Lucknow, Ontario, Canada.

Joynt Brand Canada Unleached Hardwood Ashes.

Lister's Agricultural Chemical Works, Newark, N. J.
Lister's Bone Meal,
Lister's Grain and Grass Fertilizer,
Lister's 5—9—4 Potato Fertilizer,
Lister's Revised Celebrated Onion Fertilizer,
Lister's Revised Complete Tobacco Manure from Sulphate,
Lister's Revised Corn and Potato Fertilizer,
Lister's Revised Celebrated Corn Manure,
Lister's Revised High Grade Special for Spring Crops,
Lister's Revised Potato Manure,
Lister's Special Tobacco Fertilizer,
Lister's Standard Grass Fertilizer,
Lister's Success Fertilizer,
Nitrate of Soda.

Lowell Fertilizer Co., 40 North Market St., Boston, Mass.

Lowell Animal Brand,

Lowell Bone Fertilizer,
Lowell Corn and Vegetable,
Lowell Dissolved Bone and Potash,
Lowell Empress Brand,
Lowell Ground Bone,
Lowell Lawn Dressing,
Lowell Market Garden Manure,
Lowell Nova Scotia Land Plaster,
Lowell Potato Grower,
Lowell Potato Manure,
Lowell Potato Phosphate,
Lowell Special Grass Mixture,
Lowell Special Tobacco,
Lowell Sterling Phosphate,
Lowell Superior Fertilizer,
Lowell Tankage,
Acid Phosphate (12%),
Nitrate of Soda.

James E. McGovern, Andover, Mass.

Andover Animal Fertilizer.

Mapes' Formula and Peruvian Guano Co., 143 Liberty St., New York City.

Mapes' Average Soil Complete Manure,
Mapes' Cauliflower and Cabbage Manure,
Mapes' Cereal Brand,
Mapes' Complete Manure for General Use,
Mapes' Complete Manure 10% Potash,
Mapes' Corn Manure,
Mapes' Dissolved Bone,
Mapes' Economical Potato Manure,
Mapes' Fruit and Vine Manure,
Mapes' Grass and Grain Spring Top Dressing,
Mapes' Lawn Top Dressing,
Mapes' Potato Manure,
Mapes' Tobacco Ash Constituents,
Mapes' Tobacco Manure, Wrapper Brand,
Mapes' Tobacco Starter, Improved,
Mapes' Top Dresser, Improved, Full Strength,
Mapes' Top Dresser, Improved, Half Strength,
Mapes' Vegetable or Complete Manure for Light Soils.

Marl Products Co., Barton, Vt.
Shell Marl.

George E. Marsh Co., Lynn, Mass.

Marsh's Ground Tankage,
Marsh's Pure Bone Meal.

Memphis Cottonseed Products Co., Memphis, Tenn.

Selden Brand Cottonseed Meal.

W. L. Mitchell, New Haven, Conn.

Hardwood Ashes.

The Mitchell Fertilizer Co., Tremley, N. J.

Mitchell's Special Fertilizer,
Mitchell's Vegetable Fertilizer.

George L. Munroe & Sons, Oswego, N. Y.

Pure Unleached Wood Ashes.

National Fertilizer Co., 92 State St., Boston, Mass.

National Ammoniated Bone Phosphate,
National Market Garden Special Fertilizer,
National Plain Superphosphate,
National Special Complete Grass Fertilizer,
National Special Complete Root and Grain Fertilizer,
National Special Eureka Potato Fertilizer,
National Special Fish and Potash,
National Special High Grade Top Dressing,
National Special Potato Phosphate,
National Special Complete Fertilizer (Sul.),
National Special XXX Fish and Potash,
National Tobacco Special with Carbonate of Potash,
National Tobacco Special with Sulfate of Potash (Revised).

Natural Guano Co., Aurora, Ill.

Sheep's Head Pulverized Sheep Manure.

New England Fertilizer Co., 40 A North Market St., Boston, Mass.

New England Complete Manure,
New England Corn and Grain Fertilizer,
New England Corn Phosphate,
New England Corn Manure,
New England High Grade Potato Fertilizer,

New England Improved Tobacco Grower,
New England Market Garden Manure,
New England Potato Fertilizer,
New England Special Onion Grower,
New England Superphosphate.

New England Lime Co., Danbury, Conn.

Adams (Mass.) Agricultural Lime,
Adams (Mass.) Fresh Burned Granulated Lime,
Canaan (Conn.) Lime Ashes,
Connecticut Agricultural Lime.

New England Phosphate Co., 107 University Road, Brookline, Mass.

Florida Natural Rock Phosphate,
Phosfood (Florida Natural Rock Phosphate).

Nitrate Agencies Co., 28 Bridge St., New York City.

Basic Slag (H. A. Brand),
Dried Blood,
Ground Bone,
Ground Tankage,
High Grade Acid Phosphate (14%),
High Grade Acid Phosphate (16%),
High Grade Genuine Peruvian Guano,
Nitrate of Soda,
Sulfate of Ammonia.

Olds & Whipple, Hartford, Conn.

Olds & Whipple's Castor Pomace,
Olds & Whipple's Complete Grass Fertilizer,
Olds & Whipple's Complete Corn and Potato Fertilizer,
Olds & Whipple's Complete Onion Fertilizer,
Olds & Whipple's Complete Tobacco Fertilizer,
Olds & Whipple's Cottonseed Meal,
Olds & Whipple's Dry Ground Fish,
Olds & Whipple's Special Onion Fertilizer,
Acid Phosphate,
Agricultural Lime,
Precipitated Bone Phosphate.

Carroll S. Page, Hyde Park, Vt.

Raw Ground Bone.

Parmenter & Polsey Fertilizer Co., 40 N. Market St., Boston, Mass.

Parmenter & Polsey A. A. Brand,
Parmenter & Polsey Aroostook Special,
Parmenter & Polsey Corn and Grain Fertilizer,
Parmenter & Polsey Complete Grass Fertilizer,
Parmenter & Polsey Maine Potato Fertilizer,
Parmenter & Polsey Plymouth Rock Brand Fertilizer,
Parmenter & Polsey Potato Fertilizer,
Parmenter & Polsey Special Potato Fertilizer,
Parmenter & Polsey Special Tobacco Grower,
Parmenter & Polsey Special Onion Grower.

Pownal Lime Co., 92 State St., Boston, Mass.

Ground Limestone.

R. T. Prentiss, Holyoke, Mass.

Potatoes and Vegetables,
Top Dressing for Grass.

Pulverized Manure Co., Chicago, Ill.

Wizard Brand Cattle Manure,
Wizard Brand Sheep Manure.

Raw Products Co., 21-23 S. Market St., Boston, Mass.

Florida Raw Ground Phosphate,
Tennessee Ground Raw Rock Phosphate.

Reading Bone Fertilizer Co., Reading, Pa.

Alkaline Phosphate and Potash,
Gilt Edge Potato and Tobacco Grower,
Reading Prize Winner,
Reading Special Potato and Tobacco Manure,
Reading Special Grain and Grass Producer,
Truck, Fruit, Tree, Vine, Potato and Tobacco Grower.

George B. Robinson, Jr., New York City.

Robin Brand Cottonseed Meal.

Rockland & Rockport Lime Co., Rockland, Me.

R. R. Land Lime.

Rogers Manufacturing Co., Rockfall, Conn.

Complete Potato and Vegetable,
High Grade Corn and Onion,
High Grade Grass and Grain Seeding Down,
High Grade Oats and Top Dressing,
High Grade Soluble Tobacco Fertilizer,
High Grade Tobacco and Potato,
High Grade Tobacco Grower, (Vegetable and Sulfate Formula),
High Grade Tobacco Grower, (Vegetable and Carbonate Formula),
Pure Fine Ground Bone,
Pure Knuckle Bone Flour.

The Rogers & Hubbard Co., Middletown, Conn.

Hubbard's "Bone Base" All Soils-All Crops Phosphate,
Hubbard's "Bone Base" Complete Phosphate,
Hubbard's "Bone Base" Fertilizer for Seeding Down and Fruit,
Hubbard's "Bone Base" Fertilizer for Oats and Top Dressing,
Hubbard's "Bone Base" Potato Phosphate,
Hubbard's "Bone Base" Soluble Corn and General Crops Manure,
Hubbard's "Bone Base" Soluble Tobacco Manure,
Hubbard's "Bone Base" Soluble Potato Manure,
Pure Raw Knuckle Bone Flour,
Strictly Pure Fine Bone,
Tobacco Special.

Ross Bros. Co., 88 Front St., Worcester, Mass.

Corn, Grass and Grain Fertilizer,
High Grade Potato and Vegetable Fertilizer,
Potato and Vegetable Fertilizer,
Spring Grass Top Dressing,
Worcester Special Lawn Dressing.

F. S. Royster Guano Co., 1604 Munsey Building, Baltimore, Md.

Royster's Favorita Compound,
Royster's Parfait Compound 5-8-4,
Royster's Solace Compound,
Royster's Tomahawk Compound,
Royster's Truckers' Delight,
Royster's Utopia Compound.

J. W. Sanborn, Pittsfield, N. H.

Grass and Grain,
Hill and Drill, or for Use in Hill or Drill,
Potato and Corn.

Sanderson Fertilizer & Chemical Co., New Haven, Conn.

Sanderson's Atlantic Coast Bone, Fish and Potash Revised,
Sanderson's Basic Lime Phosphate,
Sanderson's Corn Superphosphate,
Sanderson's Fine Ground Bone,
Sanderson's Fine Ground Fish,
Sanderson's Fine Ground Tankage,
Sanderson's Nitrate of Soda,
Sanderson's Plain Superphosphate,
Sanderson's Potato Manure Revised,
Sanderson's Special Formula A,
Sanderson's Special Formula B,
Sanderson's Special Complete Tobacco Grower,
Sanderson's Special with Potash Revised,
Sanderson's Special Top Dressing for Grass and Grain.

M. L. Shoemaker & Co., Ltd., Philadelphia, Pa.

"Swift-Sure" Bone Meal,
"Swift-Sure" Superphosphate for Tobacco and General Use.

A. M. Smith & Co., Boston, Mass.

Equity Brand Dry Ground Hen Manure.

J. E. Soper Co., 206 Chamber of Commerce, Boston, Mass.

Pilgrim Cottonseed Meal,
Pioneer Cottonseed Meal.

Springfield Rendering Co., Springfield, Mass.

Springfield Animal Fertilizer for All Crops,
Springfield Ground Bone,
Springfield Ground Tankage,
Springfield High Grade Dressing,
Springfield Special Potato and Vegetable.

The Stearns Lime Co., Danbury, Conn.

Ground Limestone for Soil Improvement.

B. C. Stell, Norfolk, Va.

Prime Cottonseed Meal.

W. J. Tavender, 14 Paisley Park, Boston, Mass.

Am-Pho-Nite.

Wm. Thomson & Son, Ltd., Clovenfords, Scotland.

Thomson's Vine, Plant and Vegetable Manure,
Thomson's Special Chrysanthemum Manure.

The Tobey Lime Co., West Stockbridge, Mass.

Tobey Agricultural Lime.

20th Century Specialty Co., 317 Adams St., Boston, Mass.

"Scientific" 12 L.

Union Seed & Fertilizer Co., New York City.

American Red Tag Cottonseed Meal,
Yellow Tag Choice Cottonseed Meal.

Union Chemical Co., Lewiston, Maine.

Verdantine.

Vermont Marl Co., Brattleboro, Vt.

Shell-Marl Land-Lime.

Virginia-Carolina Chemical Co., 24 Broad St., New York City.

V. C. C. Co.'s Indian Brand for Tobacco (C. S. M. with Sulfate),
V. C. C. Co.'s National Corn, Grain and Grass Top Dressing (With 4% Potash),
V. C. C. Co.'s Owl Brand Potato and Truck Fertilizer (With 4% Potash),
V. C. C. Co.'s Tobacco and Onion Special (C. S. M. with Sulfate),
V. C. C. Co.'s XXX Fish and Potash.

West Stockbridge Lime Co., West Stockbridge, Mass.

Agricultural Lime.

Whitman & Pratt Rendering Co., Lowell, Mass.

Whitman & Pratt's All Crop,
Whitman & Pratt's Corn Success,
Whitman & Pratt's Potato Manure,
Whitman & Pratt's Potash Special,
Whitman & Pratt's Pure Ground Bone,
Whitman & Pratt's Special Top Dresser,
Whitman & Pratt's Vegetable Grower,
Acid Phosphate,
Nitrate of Soda,
Tankage (7.40-9.15).

Wilcox Fertilizer Co., Mystic, Conn.

Wilcox Acid Phosphate,
Wilcox Complete Bone Superphosphate,
Wilcox Corn Special,
Wilcox Dry Ground Fish Guano,
Wilcox Fish and Potash,
Wilcox Grass Fertilizer,
Wilcox High Grade Tobacco Special,
Wilcox Nitrate of Soda,
Wilcox Potato Fertilizer,
Wilcox Potato, Onion and Vegetable Phosphate,
Wilcox Pure Ground Bone,
Wilcox Special Superphosphate.

S. Winter Co., Brockton, Mass.

Pure Ground Bone.

Witherbee, Sherman & Co. Inc., Port Henry, N. Y.

Natural Phosphate with Barium Sulfide (Barium-Phosphate),

A. H. Wood & Co., Framingham, Mass.

Wood's B. B. Fertilizer,
Wood's 1915 Special Fertilizer.

J. M. Woodard, Greenfield, Mass.

Woodard Unground Tankage.

Worcester Rendering Co., Auburn, Mass.

Fine Ground Tankage,
Ground Steamed Bone,
Royal Worcester Corn and Grain Fertilizer,
Royal Worcester Potato Fertilizer.

Collection of Fertilizers. The fertilizer collection for 1915 has been in charge of our regular inspector, Mr. James T. Howard, who has had charge of this important work for many years. He was assisted by Mr. R. C. Tate, who also helped in the collection of samples for the season of 1912. These two men worked together a part of the time, beginning in the east section of the state. Mr. L. O. Stevenson, a graduate of the Massachusetts Agricultural College, took care of the inspection in the Connecticut Valley districts. Mr. Stevenson was an experienced man, having helped with the collection for the season of 1913. The sampling begins in early winter, when large quantities of cottonseed meal are bought by the farmers in the Connecticut Valley as a nitrogen source for tobacco. The local farmers also buy large quantities of wood ashes which are usually shipped in bulk. These materials are sampled upon call from the purchaser, each carload being analyzed by itself so that in case of a deficiency a rebate may be asked for. Arrangements can usually be made with the station to sample these two materials and other fertilizers, but application should be made as early as possible. Wherever it is impossible for us to send a man to take the samples, a sampling tube will be forwarded by express, together with instructions in regard to the proper method of procedure. Samples thus taken can subsequently be forwarded under seal by express to the experiment station.

Our usual inspection season begins about April 1st and continues through May, this being about the time when the mixed fertilizers are being distributed. During this time it is planned to sample every brand of fertilizer and chemical registered and sold in the State of Massachusetts. The sampling is always done by the use of a tube which takes a core of fertilizer the entire length of the bag. Ten per cent of the number of bags present are always sampled and never less than ten bags, providing that number is present. Wood ashes and lime, if shipped in bulk, are sampled by means of a tube, portions being taken from at least thirty different places in the pile, providing the pile represents a carload lot.

Towards the close of the season, after the state has been canvassed, if certain brands are not found the manufacturer is asked to locate the same. If a brand is not thus located the manufacturer is asked to send a sealed, certified sample. The analyses of such samples will be found listed in the fertilizer bulletin under the name of "Manufacturers' Samples".

It is planned to take duplicate samples of the various commercial fertilizers in different parts of the state, as it is believed that the analysis of a composite is more representative than the analysis of one sample, which may represent only a small tonnage.

As in the past our inspectors have taken samples of large shipments of private formulas. Parties having fertilizers of this description should communicate with the experiment station as soon as the shipment arrives, and so far as possible arrangements will be made to have the same inspected.

From data collected during the past year, 6914 tons of fertilizer were sampled. This necessitated sampling from 16,709 different sacks. Of the complete fertilizers sampled 60 per cent of the total tonnage were high grade fertilizers, (valued over $24.00 a ton), 31 per cent were medium grade, (valued between $18.00 and $24.00 a ton), and 9 per cent were low grade, (valued less than $18.00 a ton).

During the season of 1915, 150 towns were visited and 1322 samples, representing 513 distinct brands, were drawn from stock found in possession of 353 different agents.

Fertilizers Analyzed.

Seven hundred and twenty-one analyses (505 distinct brands) have been made during the year's inspection. They are as follows:

Complete fertilizers	373
Fertilizers furnishing phosphoric acid and potash	20
Ground bone, tankage and dry ground fish	61
Nitrogen compounds	190
Potash compounds	7
Phosphoric acid compounds	34
Lime compounds	36
	721

Trade Values of Fertilizing Ingredients.

The following table of trade values was adopted at a meeting of representatives of the experiment stations of New England, New York and New Jersey held during the first week in March, 1915. They represent the average cost per pound at retail for the six months preceding March 1, 1915 of nitrogen, potash and phosphoric acid as furnished by chemicals and standard unmixed fertilizing materials in the large markets of New England and New York. In the main they represent the average wholesale quotations on chemicals and raw products which appeared in the various fertilizer and allied trade journals from September 1, 1914 to March 1, 1915, plus about 20 per cent.

	Cents per pound.	
Nitrogen.	1914	1915
In ammonia salts	16.5	15.5
In nitrates	16.5	15.
Organic nitrogen in dry and fine ground fish, blood and meat	22.5	22.
Organic nitrogen in fine* bone and tankage	21.5	21.
Organic nitrogen in coarse* bone and tankage	17.5	17.

	Cents per Pound.	
	1914	1915
Organic nitrogen in mixed fertilizers	19.5	19.
Organic nitrogen in cottonseed meal, castor pomace, linseed meal, etc.	22.5	20.
Phosphoric Acid.		
Soluble in water	4.5	4.
Soluble in neutral ammonium citrate solution (reverted phosphoric acid)**	4.	3.5
In fine* ground bone and tankage	4.	4.
In coarse* bone, tankage and ashes	3.5	3.5
In cottonseed meal, castor pomace and linseed meal	4.	3.5
Insoluble (in neutral ammonium citrate solution) in mixed fertilizers	2.	2.
Potash.		
As sulfate free from chlorides	5.	9.5
As muriate (chloride)	4.	8.5
As carbonate	8.	11.15
In cottonseed meal, castor pomace, linseed meal, etc.	5.	9.5

In reference to the trade values of potash it should be said that the figures given in this table would not have held throughout the season. They represent the price at which potash salts could have been bought, however, during the months specified. During the season potash salts rose to $250.00 a ton for both sulfate and muriate of potash, making the pound of actual potash cost 25c. During the months of October and November quotations were known to run as high as $400.00 a ton for muriate in some of the southern states. Of course these prices make the purchase of potash salts for fertilizing purposes prohibitive.

RAW PRODUCTS AND CHEMICALS.

Ground Bone. Fifty-two samples of ground bone, represented by 32 analyses have been inspected during the season. The average retail cash price for ground bone has been $33.13 and the average calculated commercial valuation $30.78 per ton. Ground bone has averaged 2.97 per cent nitrogen, 74.75 per cent of which has been found active by the alkaline permanganate method. Four brands were found deficient in nitrogen and 4 in phosphoric acid. Only 1 brand was found to have a commercial shortage of over 50c per ton. This was put out by the *International Agricultural Corporation, Buffalo Fertilizer Works, Branch,* No. 1157. Nitrogen found 2.93%, guaranteed 2.40%; phosphoric acid found 16.61%, guaranteed 22%.

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*Fine bone and tankage are separated from coarse bone and tankage by means of a sieve having circular openings 1-50 of an inch in diameter. Valuations of bone and tankage are based upon degree of fineness as well as upon composition.

**Dissolved by a neutral solution of ammonium citrate, sp. gr. 1.09, in accordance with method adopted by the Association of Official Agricultural Chemists.

Ground Tankage. Eighteen samples of tankage have been inspected, necessitating 14 analyses. Five of these samples were found deficient in nitrogen. The average retail cash price for tankage has been $34.49 and the average calculated commercial valuation $34.02 per ton. The average total nitrogen in tankage was 5.90 per cent, of which 70.85 per cent has been found active by the laboratory method. Nitrogen in fine tankage has cost on the average 21.37 cents; nitrogen in coarse tankage has cost 17.23 cents per pound. One sample was found to have a commercial shortage of over 50 cents per ton.

Nitrate Agencies Co., Canadian Ground Tankage No. 558. Nitrogen found 5.01%, guaranteed 5.75%; phosphoric acid found 16.28%, guaranteed 13.73%.

Dissolved Bone. Three samples of dissolved bone have been analyzed and found well up to the guarantee. The average retail cash price has been $31.42 and the average calculated commercial valuation $23.94 per ton. The average per cent of nitrogen in this product was 2.84, 75.35 per cent of which was found in active form.

Dry Ground Fish. Twenty-eight samples of dry ground fish were inspected, necessitating 12 analyses. Six were found deficient in nitrogen and 2 in phosphoric acid. The average retail cash price has been $48.03 and the average calculated commercial valuation $43.05 per ton. The product has averaged 8.71 per cent total nitrogen, about 71.42 per cent of which has been found active. Nitrogen from fish has cost on the average 24.72 cents per pound. Two brands were found to have a commercial shortage of over 50 cents a ton.

Bowker Fertilizer Co., Bowker's Dry Ground Fish No. 357. Nitrogen found 7.93%, guaranteed 8.23%; phosphoric acid found 6.84%, guaranteed 6.00%.

The E. D. Chittenden Co., Dry Ground Fish No. 309. Nitrogen found 7.43%, guaranteed 8.20%; phosphoric acid found 5.49%, guaranteed 6.00%.

Another sample of this same brand collected at a different place also showed a serious shortage. No. 311. Nitrogen found 7.51%, guaranteed 8.20%; phosphoric acid found 5.69%, guaranteed 6.00%.

Dried Blood. Seven samples of dried blood have been analyzed and found to be well up to the guarantee. The average per cent of nitrogen found in this product was 10.22, 77.20 per cent of which was found active by the laboratory method. The average per cent of phosphoric acid in dried blood was 6.55, the highest amount found being 8.11 per cent. The average retail cash price for blood has been $48.10, and the average calculated commercial valuation $49.57 per ton. The average pound cost of nitrogen from this source has been 23.53 cents.

Castor Pomace. Six samples of castor pomace were analyzed, the nitrogen guarantee being well maintained. The cash price per ton of this material was $25.40, the average calculated commercial valuation $20.30. The cost of nitrogen in castor pomace was 25 cents per pound. The average per cent of nitrogen was found to be 5.08, of which 57.7 per cent was found active by the laboratory method.

Cottonseed Meal. One hundred and forty-eight samples of cottonseed meal have been examined. These represent carload lots in all cases. They were largely taken by our collectors upon call from the purchaser. The material is bought by the local farmers in the Connecticut Valley as a nitrogen source for tobacco. There has been a tendency among the dealers in cottonseed meal to place a nitrogen guarantee much in excess of what the meal will actually test. This has resulted in a great many nitrogen deficiencies. Arrangements were made, however, with the purchaser so that if analysis showed a deficiency a proper rebate would be in order. It is felt that this practice of placing a high guarantee on the meal is not to be encouraged, it being much fairer to put a guarantee of nitrogen upon the article which can be readily maintained. Dealers will please note that the buyers of cottonseed meal desire the grade purchased and not rebates. Altho rebates may offer a satisfactory adjustment of deficiencies, they do not in any way affect the right of the station official to take such action as may seem advisable when such deficiencies are plainly due to misrepresentation or carelessness. The average retail cash price for cottonseed meal has been $31.26, and the average calculated commercial valuation, based on the nitrogen content alone, has been $26.47 a ton. The average pound cost of nitrogen has been 23.57 cents. The average per cent of nitrogen in cottonseed meal has been 6.63. The nitrogen in cottonseed meal shows an activity of 56 per cent by the laboratory methods, and about 69 per cent by pot experiments carried out at this station. Seventy samples have shown a nitrogen deficiency. The following brands have shown a commercial shortage of over 50 cents a ton. In calculating this commercial shortage the value of the potash and phosphoric acid has not been taken into consideration, as the meals have been bought largely as a nitrogen source and in the majority of cases no guarantee of phosphoric acid or potash was made by the shipper.

F. W. Brode & Co., No. 28. Nitrogen found 6.18%, guaranteed 6.56%. No. 244, nitrogen found 6.70%, guaranteed 6.99%. No. 354, nitrogen found 6.19%, guaranteed 6.50%. No. 808, nitrogen found 6.39%, guaranteed 6.50%. No. 1142, nitrogen found 6.45%, guaranteed 6.58%.

Buckeye Cotton Oil Co, No. 89. Nitrogen found 5.90%, guaranteed 6.18%.

A. W. Higgins, No. 72. Nitrogen found 5.92%, guaranteed 6.50%. No. 101, nitrogen found 6.87%, guaranteed 8.00%. No. 102, nitrogen found 6.79%, guaranteed 8.00%. No. 109, nitrogen found 6.66%, guaranteed 7.50%. No. 110, nitrogen found 5.63%, guaranteed 8.00%. No. 114, nitrogen found 5.86%, guaranteed 6.50%.

Humphreys-Godwin Co., No. 6. Nitrogen found 6.23%, guaranteed 6.56%. No. 11, nitrogen found 6.40%, guaranteed 6.56%. No. 14, nitrogen found 6.40%, guaranteed 6.56%. No. 20, nitrogen found 6.11%, guaranteed 6.56%. No. 21, nitrogen found 6.01%, guaranteed 6.56%. No. 23, nitrogen found 6.15%, guaranteed 6.56%. No. 24, nitrogen found 5.83%, guaranteed 6.56%. No. 31, nitrogen found 6.83%, guaranteed 7.40%. No. 32, nitrogen found 6.67%, guaranteed 7.40%. No. 33, nitrogen found 6.83%, guaranteed 7.40%. No. 34, nitrogen found 6.63%, guaranteed 7.40%. No. 38, nitrogen found 5.77%, guaranteed 6.56%. No. 53, nitrogen found 7.17%, guaranteed 7.50%. No. 55, nitrogen found 6.87%, guaranteed 7.00%. No. 63, nitrogen found 7.00%, guaranteed 7.50%. No. 65, nitrogen found 6.75%, guaranteed 7.50%. No. 98, nitrogen found 7.27%, guaranteed 7.50%. No. 703, nitrogen found 7.32%, guaranteed 8.00%. No. 1241, nitrogen found 6.38%, guaranteed 6.56%. No. 71, nitrogen found 6.97%, guaranteed 8.00%. No. 17, nitrogen found 6.16%, guaranteed 6.50%. No. 25, nitrogen found 5.82%, guaranteed 6.56%. No. 29, nitrogen found 6.10%, guaranteed 6.56%. No. 30, nitrogen found 6.35%, guaranteed 6.56%. No. 44, nitrogen found 6.22%, guaranteed 6.50%. No. 94, nitrogen found 6.00%, guaranteed 6.50%. No. 113, nitrogen found 6.11%, guaranteed 6.50%. No. 784, nitrogen found 6.39%, guaranteed 6.50%. No. 785, nitrogen found 6.17%, guaranteed 6.50%.

Memphis Cottonseed Products Co., No. 176. Nitrogen found 6.36%, guaranteed 6.50%.

W. Newton Smith, No. 45. Nitrogen found 6.29%, guaranteed 6.56%. No. 47, nitrogen found 6.31%, guaranteed 6.56%. No. 267, nitrogen found 6.22%, guaranteed 6.56%.

J. E. Soper Co., No. 19. Nitrogen found 6.38%, guaranteed 6.56%. No. 70, nitrogen found 6.33%, guaranteed 6.50%.

B. C. Stell, No. 67. Nitrogen found 6.01%, guaranteed 6.56%. No. 243, nitrogen found 5.88%, guaranteed 6.56%.

Nitrate of Soda. Thirty-eight samples, necessitating 11 analyses, have been examined. All have been found well up to the minimum guarantee. Nitrate of soda has cost on the average $50.27 and the average calculated commercial valuation has been $46.68 per ton. The average nitrogen content of this product has been 15.56 per cent. A pound of nitrogen from nitrate of soda has cost on the average 16.15 cents.

Sulfate of Ammonia. Three samples have been analyzed and all were found well up to the guarantee. The average retail cash price has been $64.67 and the average commercial valuation $63.95 per ton. Sulfate of ammonia has tested on the average 20.63 per cent nitrogen. The average cost of a pound of nitrogen in this form has been 15.7 cents.

Calcium Cyanamid. Only 1 sample of this material was collected and analyzed. The nitrogen guarantee was well maintained. Calcium cyanamid cost on the average $54.84 and the average calculated commercial valuation was $48.83 per ton. It showed 15.75 per cent nitrogen, making the average cost of a pound of nitrogen from this source 17.44 cents. Calcium cyanamid carries about 50 per cent of calcium oxide which was not taken into account in the valuation of this product.

POTASH COMPOUNDS.

There was very little potash salt offered to the consumer except in the mixed goods during the season of 1915. This was on account of the embargo placed upon the export of potash by the German Government during the European war. The few samples collected were from stock bought early in the season or from stray lots which were carried over from the preceding year. The retail cash price and valuations placed upon these, of course, would not hold throughout the season, as very much higher prices prevailed in late summer. Very few substitute sources of potash have made their appearance in the general trade. It is understood that steps have been taken to recover potash from deposits of alunite in Utah, but at the present writing very little of this has made its appearance in the general market. The same thing may be said in regard to the potash from the kelp fields of the Pacific Coast.

The consumer of fertilizers has endeavored to get along without the use of very much potash. Wherever a good grade of wood ashes has been offered it has met with a ready market. This class of material varies so widely in composition that it should always be bought on a statement of the potash guarantee, subject to an analysis. Good grades of wood ashes should analyze around 5 per cent water soluble potash. Many of the ashes offered for sale during the past year have tested less than 3, and in a number of cases less than 2 per cent actual water soluble potash. These, altho they are quoted as being unleached hardwood ashes, cannot be considered as such. The small amount of potash present in a great many of these materials may be due to poor storage conditions, the potash being leached by exposure to the rains and snows, rather than by intentional leaching for the potash which they contain.

High Grade Sulfate of Potash. Only 5 samples of high grade sulfate of potash were collected and 1 analysis made. The average retail cash price for this salt was $84.00, and the average calculated commercial valuation $94.01 a ton. The analysis showed the presence of 49.48 per cent of potassium oxide, and a pound of actual potash cost 8.49 cents. Neither potash-magnesium sulfate nor kainit was found in the general markets.

Muriate of Potash. Three samples of muriate of potash were taken by our inspectors and 1 analysis was made. The average percentage of potash was 51.52. The average retail cash price was $68.13 and the average calculated commercial valuation $87.54 per ton. This made the pound cost of actual potash 6.61 cents.

PHOSPHORIC ACID COMPOUNDS.

Dissolved Bone Black. Four samples of dissolved bone black have been examined and no deficiencies were found. The average available phosphoric acid found in this material was 16.71 per cent. The average retail cash price was $24.00 and the average calculated commercial valuation $13.55 per ton. This made the cost of a pound of available phosphoric acid from this source 7.18 cents.

Acid Phosphate. Fourteen analyses of acid phosphate were made, representing 35 samples. No deficiencies were found. The average retail cash price has been $14.22 and the average calculated commercial valuation has been $12.10 per ton. The average per cent of available phosphoric acid found in acid phosphate was 15.29. The pound of available phosphoric acid from this source has cost on the average 4.65 cents.

Basic Slag Phosphate. Only 1 sample of genuine Thomas basic slag phosphate was collected. This material is largely imported either from Belgium, England or Germany, but the European war has prevented shipments of this commodity. There are two sources of supply of basic slag phosphate in this country; one at Cape Breton, Canada, and another in Birmingham, Alabama. Samples of products from these two sources were not met with in our general markets during the season. The retail cash price for the sample collected was $14.50 and the average calculated commercial valuation $11.68 per ton. The pound cost of available phosphoric acid from this material was 4.79 cents.

MIXED COMPLETE FERTILIZERS.

It is always interesting and instructive to compare the different grades of mixed complete fertilizers that are offered to the trade from year to year, and it is gratifying to note that the number of low grade fertilizers placed on sale is growing smaller every season. It is hoped that in time all purchasers of mixed fertilizers may realize that it is to their advantage to buy only high grade goods on account of the very much reduced cost of the plant food which they carry. For the sake of a systematic study of the different grades, the following tables have been compiled. In listing, those having a calculated commercial valuation of $24.00 or over per ton have been designated as high grade, between $18.00 and $24.00 per ton medium grade, and below $18.00 per ton low grade. Table No. 1 shows a comparison of the three grades of fertilizer in relation to average retail cash price, average calculated commercial value and money difference between cash price and commercial value, for two successive years.

TABLE NO. 1

	High Grade		Medium Grade		Low Grade	
	1914	1915	1914	1915	1914	1915
Average retail cash price per ton,	$38.75	$39.99	$33.52	$31.73	$29.65	$29.92
Average calculated commercial value per ton,	28.54	28.37	20.78	20.84	14.70	14.40
Average money difference,	10.21	11.62	12.74	10.89	14.95	15.52

The above table shows:

(*a*) That on the average the complete mixed fertilizers have cost about 9 cents more per ton than for 1914.

(*b*) That the average calculated commercial value of plant food in a ton has been 14 cents less than for the previous season.

(*c*) That the percentage excess of the selling price over the calculated commercial value of plant food in the low grade fertilizers is almost three times more than in the high grade goods and is over twice that in the medium grade fertilizers.

(*d*) That with a 33.7 per cent advance in price over the low grade fertilizer the high grade furnishes about 97 per cent increase in commercial plant food value.

(*e*) That the money difference between the average selling price and the average commercial valuation in the high grade fertilizers is $3.90 less than in the low grade goods.

Table No. 2 shows the average chemical composition of the three grades of fertilizers.

TABLE NO. 2

GRADE	Number of Brands	Percent of Whole Number	Nitrogen			Phosphoric Acid				Potassium Oxide	Lbs. of Available Plant Food in 100 Lbs. of Fertilizer
			Total	Percentage Availability of Total Nitrogen	Percentage Availability of Org. Nitrogen	Soluble	Reverted	Available	Insoluble		
High	155	48.00	4.25	86.35	69.15	3.83	4.15	7.98	1.61	4.30	15.95
Medium	103	31.89	2.55	85.50	67.82	4.59	3.70	8.29	1.44	3.21	13.68
Low	65	20.11	1.65	73.94	60.56	3.91	3.52	7.43	1.24	2.03	10.68

The above table shows:

(*a*) That a ton of the average high grade fertilizer furnishes 52 pounds more nitrogen and 45.4 pounds more actual potash than does a ton of the low grade goods.

(*b*) That a ton of the average high grade fertilizer furnishes 34 pounds more nitrogen and 21.8 pounds more potash than does a ton of the medium grade goods.

(*c*) That with a 33.7 per cent advance in price over the low grade fertilizer, the high grade furnishes about 49 per cent increase in available plant food.

(*d*) That the average high grade fertilizer, with about 26 per cent advance in price over the medium grade goods, furnishes over 16.50 per cent more plant food and 36.1 per cent increase in commercial value.

(*e*) That the percentage activity of total nitrogen was found to be 12.41 and the percentage activity of the organic nitrogen was 8.59 more in the high grade fertilizers than in the low grade brands, indicating that a better quality of ammoniates is used in the high grade fertilizers.

(*f*) That on the whole the percentage activity of the organic nitrogen in all three grades of fertilizer is somewhat less than during the previous year. The difference, however, is not great.

Table No. 3 shows the comparative cost per pound of nitrogen, potash and phosphoric acid in its various forms in the three grades of fertilizers.

TABLE NO. 3

FORMS OF ELEMENT	Low Grade Fertilizer	Medium Grade Fertilizer	High Grade Fertilizer
Nitrogen (as nitrates)	31.2 cts.	22.8 cts.	21.1 cts.
Nitrogen (organic)	39.5 "	28.9 "	26.8 "
Potash (as muriate)	17.7 "	12.9 "	12. "
Soluble phosphoric acid	8.3 "	6.1 "	5.6 "
Reverted phosphoric acid	7.3 "	5.3 "	4.9 "
Insoluble phosphoric acid	4.2 "	3. "	2.8 "

This summary shows:

(*a*) That the most economical fertilizer to buy is the high grade, or the one valuing commercially $24.00 or over per ton.

(*b*) That the purchaser of high grade fertilizer in place of low grade saves 11.4 cents on every pound of nitrogen, 5.7 cents on every pound of potash and 2.2 cents on every pound of phosphoric acid.

(*c*) That nitrogen in medium grade fertilizers has cost 1.9 cents, potash .9 cent and phosphoric acid .4 cent per pound more than in the high grade goods.

(*d*) That about 52 per cent of the brands of fertilizer sold in the state during the year may be classed as low and medium grades.

Summary of results of analysis of complete fertilizers as compared with guarantee:

MANUFACTURER	No. of Brands Analyzed	No. Equal to Guarantee in Commercial Value	No. with All Three Elements Equal to Guarantee	No. with One Element Below Guarantee	No. with Two Elements Below Guarantee	No. with Three Elements Below Guarantee
W. H. Abbott	3	3	—	2	1	—
Alphano Humus Co.	1	1	—	1	—	—
American Agric. Chemical Co.	63	59	31	23	7	2
Armour Fertilizer Works	8	4	—	4	2	2
Baugh & Sons Co.	3	3	—	2	1	—
Beach Soap Co.	5	5	3	2	—	—
Baltimore Pulverizing Co.	1	1	—	1	—	—
Berkshire Fertilizer Co.	9	9	9	—	—	—
C. M. Bolles	1	1	1	—	—	—
Boston Humus Co.	2	2	2	—	—	—
Bowker Fertilizer Co.	18	18	13	4	1	—
Joseph Breck & Sons Corp.	4	4	2	2	—	—
Carter's Tested Seeds, Inc.	4	4	3	1	—	—
The E. D. Chittenden Co.	7	7	7	—	—	—
Clay & Sons	1	1	1	—	—	—
The Coe-Mortimer Co.	15	13	8	3	4	—
Eastern Chemical Co.	1	1	1	—	—	—
Essex Fertilizer Co.	9	9	5	2	2	—
R. & J. Farquhar & Co.	1	1	1	—	—	—
John Glennie	1	1	—	1	—	—
C. W. Hastings	1	1	—	—	1	—
Thomas Hersom & Co.	1	1	1	—	—	—
International Agricultural Corp.	10	10	6	3	1	—
Lister's Agric. Chemical Works	9	9	4	5	—	—
Lowell Fertilizer Co.	14	11	4	6	4	—
James E. McGovern	1	1	1	—	—	—
Mapes Formula & Peru. Guano Co.	17	16	14	2	1	—
The Mitchell Fertilizer Co.	2	2	1	1	—	—
National Fertilizer Co.	11	9	5	1	5	—
Natural Guano Co.	1	1	—	1	—	—
New England Fertilizer Co.	9	5	1	3	5	—
Nitrate Agencies Co.	1	1	1	—	—	—
Olds & Whipple	5	5	5	—	—	—
Parmenter & Polsey Fertilizer Co.	9	7	1	6	2	—
R. T. Prentiss	2	2	—	2	—	—
Pulverized Manure Co.	2	2	1	1	—	—
Reading Bone Fertilizer Co.	5	3	2	1	2	—
The Rogers Manufacturing Co.	8	8	5	3	—	—
The Rogers & Hubbard Co.	9	6	3	3	3	—
Ross Bros. Co.	4	3	—	1	3	—
F. S. Royster Guano Co.	5	5	1	4	—	—
J. W. Sanborn	3	3	1	2	—	—
Sanderson Fert. & Chemical Co.	7	7	3	4	—	—
M. L. Shoemaker & Co. Ltd.	1	1	1	—	—	—
A. M. Smith & Co.	1	1	1	—	—	—
Springfield Rendering Co.	3	3	1	2	—	—
Wm. Thomson & Sons, Ltd.	2	2	2	—	—	—
20th Century Specialty Co.	1	1	—	1	—	—
Virginia-Carolina Chemical Co.	5	4	3	1	1	—
Whitman & Pratt Rendering Co.	5	3	1	4	—	—
Wilcox Fertilizer Co.	8	8	7	1	—	—
A. H. Wood & Co.	2	2	—	1	1	—
Worcester Rendering Co.	2	2	1	1	—	—

The table on the preceding page shows:

(1). That out of a total of 323 brands of complete fertilizers analyzed, 159 (49 per cent of the total number) fell below the minimum guarantee in one or more elements. These deficiencies may be classified as follows:

108 brands deficient in one element.
47 brands deficient in two elements.
4 brands deficient in three elements.

(2). That 32 brands (about 9.9 per cent of the whole number) showed a commercial shortage; that is, when overruns were used to offset shortages the value of the plant food found did not equal the value guaranteed. The deficiencies noted were as follows:

88 brands were deficient in nitrogen.
47 brands were deficient in available phosphoric acid.
78 brands were deficient in potash.

(3). Less deficiencies were found in available phosphoric acid than during the previous season. More deficiencies in nitrogen and potash were recorded than for the previous year. There were 36 more potash shortages but the commercial shortages were 14 less than for 1914.

The following table shows the commercial shortages of 25 cents and over per ton in mixed commercial fertilizers for 1914 and 1915.

Commercial Shortages	Number of Brands	
	1914	1915
More than $2.00 per ton,	3	2
Between $1.00 and $2.00 per ton,	6	4
Under $1.00 not less than 25 cts. per ton,	25	19

The following brands have shown a commercial shortage of 50 cents or over per ton, the value of overruns being used in all cases to reduce shortages.

American Agricultural Chemical Co., Extra Special Grass and Garden Mixture. No. 873. Nitrogen found 7.98%, guaranteed 8.23%, available phosphoric acid found 6.91%, guaranteed 6.00%; potash found 3.64%, guaranteed 4.00%. Another sample of this brand, Nos. 124-242-669, showed a commercial deficiency amounting to 28 cents per ton.

Top Dresser. No. 1210. Nitrogen found 4.58%, guaranteed 4.94%; available phosphoric acid found 7.96%, guaranteed 7.00%; potash found 2.73%, guaranteed 3.00%.

Williams and Clark's Americus Potato Manure. No. 1119. Nitrogen found 1.92%, guaranteed 2.06%; available phosphoric acid found 7.70%, guaranteed 8.00%; potash found 2.89%, guaranteed 3.00%. Another sample of this brand Nos. 681-939 over ran its guarantee commercially 61 cents per ton.

Armour Fertilizer Works. All Soluble. Nos. 170-283-388. Nitrogen found 2.76%, guaranteed 2.88%; available phosphoric acid found 6.97%, guaranteed 8.00%; potash found 3.93%, guaranteed 4.00%.

The Coe-Mortimer Co., E. Frank Coe's Blood, Bone and Potash. Nos. 1098-1130-1134-1160. Nitrogen found 3.99%, guaranteed 4.11%; available phosphoric acid found 10.36%, guaranteed 10.00%; potash found 3.78%, guaranteed 4.00%.

E. Frank Coe's Double Strength Top Dressing. No. 1081. Nitrogen found 7.53%, guaranteed 8.23%; available phosphoric acid found 6.20%, guaranteed 6.00%; potash found 4.45%, guaranteed 4.00%. No. 1193, nitrogen found 6.52%, guaranteed 8.23%; available phosphoric acid found 7.55%, guaranteed 6.00%; potash found 3.45%, guaranteed 4.00%.

Lowell Fertilizer Co., Lowell Lawn Dressing 5-8-4. No. 661. Nitrogen found 3.94%, guaranteed 4.10%; available phosphoric acid found 8.37%, guaranteed 8.00%; potash found 3.86%, guaranteed 4.00%.

Mapes Formula & Peruvian Guano Co., Mapes Tobacco Manure, Wrapper Brand. No. 900. Nitrogen found 6.00%, guaranteed 6.18%; available phosphoric acid found 5.67%; potash found 9.52%, guaranteed 10.50%.

National Fertilizer Co., Market Garden. No. 257. Nitrogen found 2.60%, guaranteed 2.88%; available phosphoric acid found 8.40%, guaranteed 8.00%; potash found 3.37%, guaranteed 4.00%.

National Top Dressing Special. No. 272. Nitrogen found 6.40%, guaranteed 8.23%; available phosphoric acid found 7.96%, guaranteed 6.00%; potash found 3.08%, guaranteed 4.00%. No. 510, nitrogen found 6.66%, guaranteed 8.23%; available phosphoric acid found 6.33%, guaranteed 6.00%; potash found 3.43%, guaranteed 4.00%.

New England Fertilizer Co., High Grade Potato Fertilizer. No. 637. Nitrogen found 2.22%, guaranteed 2.46%; available phosphoric acid found 7.94%, guaranteed 8.00%, potash found 4.03%, guaranteed 4.00%.

Market Garden Manure 5-8-4. No. 640. Nitrogen found 3.92%, guaranteed 4.10%, available phosphoric acid found 7.73%, guaranteed 8.00%, potash found 4.05%, guaranteed 4.00%.

Parmenter & Polsey Fertilizer Co., P. & P. Aroostook Special 4½-8-4. No. 1195. Nitrogen found 3.50%, guaranteed 3.69%, available phosphoric acid found 8.01%, guaranteed 8.00%, potash found 3.94%, guaranteed 4.00%.

Special Onion Grower. No. 1207. Nitrogen found 3.68%, guaranteed 4.10%, available phosphoric acid found 6.54%, guaranteed 6.00%, potash found 3.00%, guaranteed 3.00%

Reading Bone Fertilizer Co., Gilt Edge Potato and Tobacco Grower. Nos. 1154-1202. Nitrogen found 1.64%, guaranteed 1.64%, available phosphoric acid found 12.10%, guaranteed 12.00%, potash found 3.38%, guaranteed 4.00%.

Rogers & Hubbard Co., Complete Phosphate. Nos. 405-461-725-763-1087. Nitrogen found 1.44%, guaranteed 1.50%, available phosphoric acid found 6.22%, guaranteed 7.00%, potash found 1.67%, guaranteed 1.66%.

F. S. Royster Guano Co., Tomahawk Compound. No. 1163. Nitrogen found 3.74%, guaranteed 4.11%; available phosphoric acid found 4.46%, guaranteed 4.00%: potash found 2.77%, guaranteed 3.00%.

Another sample of this brand forwarded by the company at our request and said to be from the same lot as No. 1163 tested over the guarantee in commercial value to the amount of 14 cents per ton.

Virginia-Carolina Chemical Co., National Corn, Grain and Grass Top Dressing. No. 579. Nitrogen found 2.91%, guaranteed 3.29%, available phosphoric acid found 9.41%, guaranteed 8.00%, potash found 3.70%, guaranteed 4.00%.

QUALITY OF PLANT FOOD.

Character of Nitrogen.

Nitrogen is the most expensive element of plant food the farmer has to purchase, costing under normal conditions three to four times more than either phosphoric acid or potash. During the past season the farmer has had to pay for his organic nitrogen, in the various grades of mixed commercial fertilizers, 39.5 cents, 28.9 cents and 26.8 cents per pound, these figures representing the cost in low, medium and high grade goods, respectively. Under these conditions it does not seem unreasonable for him to expect that the nitrogen shall be derived from high grade sources and show a satisfactory availability or activity. Moreover, the fertilizer manufacturer is required by our state law to truly state, by label, any inert material which is used in a fertilizer to supply any part of the nitrogen. To quote from the law (section 1, paragraph 5): "If any part of the nitrogen contained in the fertilizer is derived from pulverized leather, raw, roasted, or steamed, or from untreated hair, wool waste, peat, garbage tankage, or from any inert material whatsoever, the label shall truly state the specific material or materials from which such part of the nitrogen is derived."

A study of the quality of nitrogen which was used in the fertilizer formulas for 1915 shows that in the medium and high grade goods 55.4 per cent and in the low grade goods 33.9 per cent of the total nitrogen were from nitrate of soda and sulfate of ammonia which are highly available.

In regard to the organic portion of the nitrogen, a study of the table shows that the high and medium grade fertilizers carried 44.6 per cent and the low grade 66.1 per cent of the total nitrogen in that form. Thirty-seven cases were noted in the 1915 inspection where organic ammoniates of low grade were used. Some cases among this number may have resulted from the use of organic ammoniates as a conditioner to improve the physical character of the goods. If they were thus used attention should have been called to the fact either on the bag or tag accompanying the fertilizer. In the 37 cases noted, 19 were from low grade, 9 from medium and 9 from high grade fertilizers. This is a somewhat larger number than was noted during the season of 1914. It is believed that anyone studying the tables of analyses will be able to readily detect cases where inferior forms of organic nitrogen have been used. They should bear in mind three distinct points in connection with the analytical data in making interpretations. Those cases may be *viewed with suspicion* which show collectively the following characteristics:

(1). *The inactive water insoluble organic nitrogen equal or exceeding the active water insoluble organic nitrogen. An exception to this may be made in cases of tobacco fertilizers known to have most of their organic nitrogen derived from cottonseed meal, castor pomace, or other high grade organic vegetable compounds.*

(2). *The total nitrogen found but little in excess of the minimum guarantee.*

(3). *The presence of only small amounts of water soluble organic nitrogen.*

Some interesting results have been secured by a vegetation experiment, conducted at this station and presented elsewhere in this bulletin, upon several brands of commercial fertilizer taken from the season's inspection of 1914. These vegetation experiments, conducted in pots, indicate that our laboratory method in most instances gives full credit for the activity of the water insoluble nitrogen. For details see pages 32 to 38 following.

The following summary table has been prepared to show the average amount found and the quality of nitrogen used by each manufacturer in the brands sold in Massachusetts during 1915.

MANUFACTURER	Number of Brands	Total Nitrogen	Percentage Activity of Total Nitrogen	Nitrates and Ammoniates	Total Organic Nitrogen	Percentage Activity of Total Organic Nitrogen	Percentage Activity of the Water Insoluble Organic Nitrogen
W. H. Abbott	3	3.32	83.14	.92	2.40	76.67	67.63
Alphano Humus Co.	1	1.67	50.90	.14	1.53	46.41	31.67
American Agric. Chemical Co.	63	2.79	86.74	1.60	1.19	68.91	58.43
Armour Fertilizer Works	8	2.94	75.86	.98	1.92	63.02	55.63
Baugh & Sons Co.	3	2.41	81.74	1.47	.94	53.19	35.30
Baltimore Pulverizing Co.	1	2.33	78.97	1.48	.85	42.36	40.97
Beach Soap Co.	5	4.07	92.14	2.82	1.25	74.40	51.52
Berkshire Fertilizer Co.	9	3.94	78.68	1.72	2.22	62.16	53.07
C. M. Bolles	1	4.26	85.45	2.19	2.07	70.05	59.21
Boston Humus Co.	1	1.82	41.75	.22	1.60	33.75	30.26
Bowker Fertilizer Co.	18	2.97	86.87	1.81	1.16	66.38	57.14
Jos. Breck & Sons, Corp.	4	2.60	68.85	.95	1.65	50.91	35.20
Carters Tested Seeds, Inc.	4	4.19	82.10	2.68	1.51	50.33	42.75
The E. D. Chittenden Co.	7	3.47	87.90	2.33	1.14	63.16	50.59
Clay & Sons	1	5.08	76.78	2.45	2.63	55.14	55.14
The Coe-Mortimer Co.	15	3.49	87.40	1.97	1.52	71.06	60.36
Essex Fertilizer Co.	9	2.54	87.80	1.24	1.30	76.16	59.22
R. & J. Farquhar & Co.	1	1.29	37.21	.07	1.22	33.61	35.97
John Glennie	1	3.53	77.62	.30	3.23	75.54	51.24
Thomas Hersom & Co.	1	5.35	80.94	2.97	2.38	57.14	50.00
International Agricultural Corp.	10	2.86	79.72	1.30	1.56	62.82	59.44
Lister's Agric. Chemical Works	9	2.60	86.16	1.33	1.27	71.66	56.10
Lowell Fertilizer Co.	14	2.76	89.86	1.47	1.29	78.30	68.18
James McGovern	1	4.10	77.08	.45	3.65	74.24	67.36
Mapes Formula & Peru. Guano Co.	17	3.92	90.06	2.97	.95	58.95	51.25
Mitchell Fertilizer Co.	2	3.68	92.66	2.60	1.08	75.00	62.50
National Fertilizer Co.	11	3.71	85.44	1.97	1.74	68.97	62.50
Natural Guano Co.	1	2.11	39.81	.29	1.82	30.22	30.22
New England Fertilizer Co.	9	2.62	86.64	1.17	1.45	75.86	63.92
Nitrate Agencies Co.	1	10.91	70.76	3.54	7.37	56.72	41.25
Olds & Whipple	5	3.73	85.52	1.76	1.97	72.60	63.27
Parmenter & Polsey Fert. Co.	9	3.24	88.58	1.54	1.70	78.24	64.42
R. T. Prentiss	2	3.97	85.40	2.45	1.52	61.85	44.23
Pulverized Manure Co.	2	2.00	45.50	.30	1.70	35.88	30.57
Reading Bone Fertilizer Co.	5	1.83	90.16	1.16	.67	73.14	60.00
Rogers Manufacturing Co.	8	4.28	80.38	1.33	2.95	71.53	67.06
Rogers & Hubbard Co.	9	3.80	86.84	2.02	1.78	71.91	60.00
Ross Bros. Co.	4	3.69	78.60	1.38	2.31	65.80	57.06
F. S. Royster Guano Co.	5	3.21	84.74	1.79	1.42	65.50	57.76
J. W. Sanborn	3	3.40	94.12	2.80	.60	66.67	53.49
Sanderson Fert. & Chemical Co.	7	2.86	76.24	1.02	1.84	63.04	53.74
M. L. Shoemaker & Co., Ltd.	1	3.33	87.69	.81	2.52	83.73	73.03
A. M. Smith & Co.	1	7.85	77.58	1.22	6.63	73.46	70.57
Springfield Rendering Co.	3	3.47	90.20	1.95	1.52	77.64	57.50
Wm. Thomson & Sons, Ltd.	2	4.94	91.30	3.27	1.67	74.25	69.93
20th Century Specialty Co.	1	.82	98.78	.79	.03	66.67	66.67
Virginia-Carolina Chemical Co.	5	2.87	85.02	1.68	1.19	63.86	52.22
Whitman & Pratt Rendering Co.	5	3.14	89.18	1.50	1.64	79.26	61.80
Wilcox Fertilizer Co.	8	2.93	81.91	1.56	1.37	61.32	57.34
A. H. Wood & Co.	2	4.02	85.08	2.15	1.87	67.92	57.14
Worcester Rendering Co.	2	3.71	88.95	1.68	2.03	79.80	53.41

Character of Phosphoric Acid.

Eighty-four and seven-tenths per cent of the total phosphoric acid found in all the complete fertilizers analyzed was present in available form, and 52 per cent of the available phosphoric acid was present in water soluble form. The phosphoric acid in mixed commercial fertilizers will usually be found derived from various sources. Ordinarily most of the available phosphoric acid will be derived from some grade of superphosphate or acid phosphate. The presence of bone or tankage will furnish considerable phosphoric acid, which, unless acidulated, will show a large amount of this element insoluble, not being dissolved either by water or neutral citrate of ammonia in our laboratory operations. An examination of the superphosphates or acid phosphates showed 95 per cent of the average total phosphoric acid as available, and 71 per cent of the available phosphoric acid was found present in water soluble form. This shows about the usual phosphoric acid availability of this class of materials.

Character of Potash.

The content of potash found in the average commercial mixed fertilizer during the year was between 3 and 4 per cent. The potash was reduced to this small amount on account of its scarcity, due to the European war. Only one of the larger fertilizer companies (The Mapes Formula & Peruvian Guano Company) maintained their full quota as in previous years. There has been no indication that the scarcity of potash salts has resulted in the use of inferior forms, such as feldspar or granite, in mixed fertilizers. It is reported that some of the larger companies have recently perfected a process which renders considerable of the potash in this class of material soluble in water. Potash thus made soluble should prove an efficient source of this element of plant food. In the tables of analysis, wherever potash has been found present in form of sulfate or carbonate, an asterisk (*) or dagger (†) has been used in the "found" potash column. Footnotes will be found giving the proportion of each form of potash present. Wherever no character is given it may be understood that potash was found present as chloride. The form of potash used in tobacco goods should exclude chlorides as far as possible.

The total water soluble potash present in the 34 brands of tobacco fertilizer analyzed was 3.95 per cent, of which 2.97 percent was from sulfate and 1.02 percent from muriate. Three brands were analyzed, having their potash guaranteed as carbonate. In these brands, out of a total of 5.45 per cent water soluble potash, 2.73 per cent was as claimed, .76 per cent was present as muriate and 1.96 per cent as sulfate. It is believed that with few exceptions the potash was actually present in the form guaranteed. It is possible that the small amount of chlorine and sulfates present where only carbonate of potash was guaranteed may have been derived from some other component of the fertilizer.

LIME COMPOUNDS.

In the tables of analyses the data on the left-hand page gives the actual composition of the different lime products. On the right-hand, or opposite page, will be found the probable combinations of the ingredients as calculated by the analytical data. It is felt that this arrangement will give the purchaser a definite idea as to the actual character of the lime products sold. Changes are continually taking place in the composition of caustic and hydrated limes. Caustic lime upon long standing and exposure will take on both water and carbon dioxide and become air-slaked. Hydrated or slaked lime upon long standing and exposure will absorb carbon dioxide; in other words, it will have a tendency to revert to its original chemical form as found in the lime rock (calcium carbonate).

The different forms of lime have been grouped in the tables as follows:

Burned or caustic lime,	2	analyses representing	2	brands.
Hydrated or slaked lime,	13	" "	12	"
Ground limestone,	11	" "	9	"
Marl,	2	" "	1	"
Lime ashes,	4	" "	2	"
Gypsum or land plaster,	4	" "	4	"

Whenever data in regard to the cost of the lime product has been available, the actual cost of 100 pounds of calcium and magnesium oxides has been calculated. A ton of lime when bought in paper or cloth bags usually costs from $1 to $1.50 more than if purchased in bulk; if the buyer furnishes bags the cost per ton is not likely to exceed 50 cents more.

A summary table which follows gives the highest, lowest and average cost of 100 pounds of calcium oxide from the various forms of lime.

SOURCES	Cost of 100 Pounds of Calcium and Magnesium Oxide. Highest	Lowest	Average
Burned or caustic lime	50 cts.	40 cts.	46 cts.
Hydrated or slaked lime	43 "	29 "	37 "
Ground limestone	48 "	31 "	39 "
Lime ashes	46 "	29 "	36 "

It is apparent from the above summary that it is well worth while to procure quotations from various lime companies. It is felt that more attention should be given to mechanical condition of lime than has been done in the past. In all probability the finer the material the more active the lime will be. In the tables will be found the mechanical analysis of each sample inspected. While the different brands vary widely, they show an improvement over conditions which prevailed a year ago. Gypsum has been listed with the other lime compounds, but it should be understood that this product is not to be used to sweeten sour soils.

Vegetation Experiment to Determine the Nitrogen Activity of Several Commercial Fertilizers Taken From 1914 Inspection, and a Comparison with the Laboratory Method (Alkaline Permanganate).

The vegetation experiment work instituted a year ago to furnish a comparison between the chemical or laboratory method, and the actual nitrogen activity by pot experiment in some of the fertilizer brands sold in Massachusetts, furnished sufficient valuable data to warrant its continuation this season on a somewhat more elaborate plan.

A greater variety of fertilizers was selected than in the previous experiment and the comparison includes recovery or yield of nitrogen, as well as dry matter.

Outline of the Experiment.

The soil was taken from Plot 11, south soil test, experiment station plots. Analysis showed it to contain .125 per cent of total nitrogen. Each pot held 43 pounds of soil and was filled with a mixture composed of 1 part of soil and 2 parts of sifted sand, which carried .0039 per cent of total nitrogen. One hundred grams of decomposed straw were applied to each pot to furnish organic matter necessary to produce normal conditions. This would be equivalent to about 4 cords per acre. The fertilizer and lime used were thoroughly mixed with the soil in each pot. The source of each ingredient was as follows:

Lime: Each pot received 27.52 grams of fine ground marl, this amount being necessary, according to the Veitch method, to produce a neutral soil. This application would be equivalent to 2 tons per acre.

Potash: Each pot received 10 grams of high grade sulfate of potash, analyzing 49.92 per cent water soluble potash, equivalent to 1320 pounds per acre.

Phosphoric Acid: Each pot received 18 grams of acid phosphate testing 14.57 per cent of available phosphoric acid, and 18 grams of basic slag phosphate testing 14.80 per cent phosphoric acid, equivalent to 2800 pounds of acid phosphate and 2800 pounds of basic slag phosphate per acre.

Nitrogen: A good quality of dried, red blood, ordinarily used for feeding domestic animals, was selected as a standard. One series (8 pots) received an application of .42 gram of nitrogen per pot, (59.5 pounds of nitrogen, 562 pounds of dried blood per acre);

another series (4 pots) received .84 gram of nitrogen per pot (119 pounds of nitrogen, 1124 pounds of blood per acre); and a third series (2 pots) received 1.26 grams of nitrogen per pot (178.5 pounds of nitrogen, 1686 pounds of blood per acre). The series containing .84 gram and 1.26 grams of nitrogen was used as a check to indicate whether the full action of the nitrogen was obtained when the minimum quantity (.42 gram) was used. (The use of the increased amounts of nitrogen was accompanied by increased yields, proving that conditions were favorable for the full effect of the smaller amount which constituted the nitrogen standard, (.42 gram). A series of pots was included which contained .42 gram of nitrogen from unwashed blood, and in addition 50 per cent more potash and phosphoric acid, in order to show that the nitrogen was the only limiting factor. (The yields were not appreciably increased by this additional application). It seemed advisable to include one series (2 pots) in which the nitrogen was derived from nitrate of soda, using .42 gram of nitrogen per pot, (59.5 pounds of nitrogen, 384 pounds of nitrate of soda per acre).

Each commercial fertilizer used was washed with distilled water so as to remove all soluble nitrogen. The residue, dried at a low temperature, was tested for its total nitrogen and a calculation made to determine how much of each fertilizer residue was necessary to furnish .42 and .85 gram of nitrogen. Each fertilizer residue was tested by the alkaline permanganate method for its nitrogen activity, in order to furnish a comparison of the laboratory method with the vegetation experiment, using material in each case produced under the same conditions. In some cases only one series of pots was used to which was added .42 gram of nitrogen, the other series to which more nitrogen was to have been added was omitted on account of an insufficient amount of fertilizer.

Crop.

Oats were selected as the crop to be grown. The seed was planted January 25th,—5 hills per pot, 7 seeds per hill. These were thinned later so that on February 16th 2 plants were allowed to each hill. Mr. R. L. Coffin of the agricultural department of the station cared for the experiment during its continuance. Water was supplied both through subirrigation and surface application, the amount being regulated by weighing each pot. The following data are taken from condition reports which were made from time to time:

March 1—Pots 52 and 53 somewhat behind the others in growth, indicating some unfavorable conditions.

March 24—Oats in all the pots were stooled out. In a few cases the oats in the nitrogen pots showed less growth than did those in the no nitrogen series. On smaller and weaker plants a mildew appears.

March 27—All plants sprayed with potassium sulfide solution for mildew.
March 29—Mildew mostly disappeared.
April 5—Crop again sprayed for mildew.
April 24—Almost no mildew present.
May 8—Crop growing well and a few heads are beginning to show.
May 24—Heads out on nearly all plants.
June 5—Most of the heads in milk and ready to harvest. The oats have made a good growth in spite of the check received from mildew. There were 10 plants in all the pots except in 12 cases, where only 9 were present.
June 7—The crop was harvested.

The yield from each pot was placed in a separate cloth bag and suspended in the greenhouse until thoroughly air dried, when it was carefully weighed in the laboratory. Each lot was then ground and dry matter and nitrogen tests made. Table No. 1 shows the yield obtained from each nitrogen source expressed in grams of dry matter, also the total amount of nitrogen recovered by the dry matter yield, exclusive of roots. In studying this table it should be borne in mind that pots 1 A, B, C, D, E, F, G, H; 2 A, B, C, D, and 4 A, B received their nitrogen from unwashed dried blood. Those receiving .42 gram of nitrogen constituted the standard. Pots 62 A, B (garbage tankage) and 15 A, B (castor pomace) received their nitrogen from unwashed material. The results on these tests show the activity of the total nitrogen. In all other cases the activities refer to the water insoluble organic nitrogen.

Table No. 2 shows the comparison in nitrogen activity between the alkaline permanganate method used in the laboratory and the vegetation experiment. The nitrogen activities in the vegetation tests have been calculated from two points of view: (1) From the increase in yield of dry matter over the no nitrogen pots, assuming unwashed blood (the standard) to have a total nitrogen activity of 80 per cent. (2) From the increase in yield of nitrogen recovered in the dry matter over the no nitrogen pots. It would appear that this latter method would be a more just comparison as it shows the actual amount of nitrogen taken up by the plant from each nitrogen source. In computing the percentages of activity by this method the nitrogen recovered by the unwashed blood is placed at 80 (both laboratory and field experiments show good red blood to have a nitrogen activity of about 80 per cent). For comparison this table also shows both the increase in yield of dry matter and the increase in yield of nitrogen over the no nitrogen pots.

TABLE NO. 1.

Pot Number	Formula	Percent of Insoluble Nitrogen in Fertilizer	Grams of Fertilizer Required to Furnish the Necessary Amount of Nitrogen	Grams of Nitrogen Applied per Pot	Yield in Grams of Dry Matter	Grams of Nitrogen in Total Dry Matter
0 A, B, C & D	No Nitrogen	–	—	—	29.001	.175
1 A, B, C, D, E, F, G & H	Dried Blood	—	3.144	.42	53.250	.316
2 A, B, C & D	“ “	—	6.288	.84	72.924	.463
3 A & B	“ “	—	9.432	1.26	82.628	.564
4 A&B (50 % more K & P)	“ “	—	3.144	.42	58.335	.324
5 A & B	Nitrate of Soda	—	2.652	.42	53.123	.321
6 A & B	Armour's Special Corn	2.26	18.581	.42	32.625	.204
7 A & B	“ “ “	2.26	37.168	.84	39.829	.250
8 A & B	Baugh's Economical Truck	1.77	23.728	.42	41.144	.236
9 A & B	“ “ “	1.77	47.456	.84	55.529	.325
10 A & B	Beach Lawn Dressing	.73	57.534	.42	30.038	.190
11 A & B	Boston Plant Life	1.76	23.863	.42	28.330	.164
12 A & B	Bradley's Comp. Potato and Veg.	2.70	15.555	.42	47.020	.280
13 A & B	“ “ “ “ “	2.70	31.111	.84	58.031	.341
14 A & B	Bradley's Green Mt. Special	.78	55.846	.42	41.444	.240
15 A & B	O. & W. Castor Pomace (Unwashed)	*5.25	8.000	.42	48.610	.276
16 A & B	Buffalo Farmers' Choice	1.16	36.207	.42	38.654	.244
17 A & B	Buffalo H. G. Manure	1.78	23.595	.42	38.212	.236
18 A & B	“ “ “ “	1.78	47.190	.84	44.466	.286
19 A & B	Buffalo Tobacco Producer	4.26	9.859	.42	45.526	.264
20 A & B	“ “ “	4.26	19.718	.84	61.821	.386
21 A & B	Buffalo 2-8-10	.99	42.424	.42	33.664	.211
22 A & B	Buffalo Vegetable and Potato	1.04	40.385	.42	38.100	.244
23 A & B	Chittenden's Tobacco and Onion	2.19	19.180	.42	46.159	.257
24 A & B	“ “ “ “	2.19	38.360	.84	54.916	.327
25 A & B	Chittenden's Fish and Potash	1.26	33.330	.42	24.720	.181
26 A & B	Chittenden's Grain and Vegetable	1.54	27.270	.42	31.803	.204
27 A & B	“ “ “ “	1.54	54.540	.84	24.873	.202
28 A & B	Chittenden's Grain and Grass	1.50	28.000	.42	35.062	.230
29 A & B	Chittenden's Potato and Grain	2.47	17.000	.42	40.563	.264
30 A & B	“ “ “ “	2.47	34.000	.84	53.980	.348
31 A & B	Chittenden's Potato Special	2.35	17.872	.42	42.021	.273
32 A & B	Coe-Mortimer Ammon. Super	1.45	28.970	.42	49.197	.298
33 A & B	“ “ “ “	1.45	57.940	.84	63.098	.414
34 A & B	Johnson Ideal Potato	2.30	18.260	.42	30.865	.194
35 A & B	“ “ “	2.30	36.520	.84	34.531	.202
36 A & B	Lister's Celebrated Onion	2.44	17.223	.42	45.228	.267
37 A & B	Lister's 10% Potato Grower	2.86	14.6853	.42	45.607	.265
38 A & B	Lowell Corn and Grain	.71	59.155	.42	43.453	.271
39 A & B	Lowell Superior 10% Potash	3.13	13.419	.42	50.535	.307
40 A & B	“ “ “ “	3.13	26.837	.84	60.189	.382
41 A & B	National Chittenden's Pot. Phos.	1.02	41.176	.42	51.142	.295
42 A & B	O. & W. Corn and Potato	2.50	16.800	.42	40.070	.248
43 A & B	“ “ “ “ “ “	2.50	33.600	.84	51.096	.305
44 A & B	O. & W. Complete Grass	2.39	17.573	.42	45.922	.276
45 A & B	O. & W. Complete Onion	2.79	15.054	.42	47.426	.285
46 A & B	“ “ “ “	2.79	30.108	.84	50.683	.318
47 A & B	O. & W. Complete Tobacco	2.65	15.849	.42	45.023	.269
48 A & B	Royster's Champion Crop Comp.	1.07	39.252	.42	42.906	.272
49 A & B	Sanderson's Potato Manure	3.01	13.954	.42	47.805	.300
50 A & B	“ “ “	3.01	27.907	.84	59.966	.370
51 A & B	Virginia-Carolina Pot. and Truck	.98	42.857	.42	34.906	.212
52 A & B	Virginia-Carolina Fish and Potash	.91	46.154	.42	26.937	.180
53 A & B	“ “ “ “ “	.91	92.308	.84	22.925	.172
54 A & B	Wilcox Grass	1.76	23.863	.42	31.082	.199
55 A & B	Wilcox Superphosphate	.78	53.846	.42	29.070	.182
56 A & B	Royal Worcester Corn and Grain	1.18	35.600	.42	46.524	.280
57 A & B	“ “ “ “ “	1.18	71.200	.84	60.939	.364
58 A & B	Chittenden's Tobacco Special	4.24	9.905	.42	45.735	.258
59 A & B	Dried Blood (Washed)	14.11	2.976	.42	54.824	.328
60 A & B	Cottonseed Meal	7.93	5.296	.42	49.359	.296
62 A & B	Garbage Tankage (Unwashed)	*4.64	9.051	.42	32.250	.216

*Total Nitrogen.

TABLE NO. 2.

Pot Number	Fertilizer Formula	Grams of Water Insoluble Nitrogen per Pot*	Increase in Dry Matter Over No Nitrogen Pots (Grams)	Increase of Nitrogen Recovered Over No Nitrogen Pots (Grams)	Relative Nitrogen Activity; Dried Blood at 80. Basis: Dry Matter	Relative Nitrogen Activity; Dried Blood at 80. Basis: Nitrogen Recovered	Comparative Nitrogen Activity by Chemical Method (Alkaline Permanganate) Dried Blood at 80
1 A, B, C, D, E, F, G, H	Dried Blood (Unwashed)	.42	24.249	.141	80.	80.	80.
5 A, B, C, D	Nitrate of Soda	.42	24.122	.146	79.58	82.84	—
15 A, B	Castor Pomace (Unwashed)	.42	19.600	.101	64.66	57.31	60.19
60 A, B	Cottonseed Meal	.42	20.358	.121	67.16	68.65	50.20
59 A, B	Dried Blood (Washed)	.42	25.823	.153	85.19	86.80	71.00
62 A, B	Garbage Tankage (Unwashed)	.42	3.249	.041	10.72	23.26	44.81
6 A, B	Armour's Spec. Corn	.42	3.624	.029	11.96	16.45	48.00
8 A, B	Baugh's Economical Truck	.42	12.143	.061	40.06	34.61	46.40
10 A, B	Beach Lawn Dressing	.42	1.038	.015	3.42	8.51	44.00
11 A, B	Boston Plant Life	.42	No inc.	No inc.	—	—	34.00
12 A, B	Bradley's Comp. Pot. & Veg.	.42	18.019	.105	59.45	59.57	54.20
14 A, B	Bradley's Green Mt. Special	.42	12.443	.065	41.05	36.88	55.80
16 A, B	Buffalo Farmers' Choice	.42	9.653	.069	31.85	39.15	42.40
17 A, B	" H. G. Manure	.42	9.211	.061	30.39	34.61	54.80
19 A & B	" Tobacco Producer	.42	16.525	.089	54.52	50.50	61.00
21 A, B	" 2-8-10	.42	4.663	.036	15.38	20.43	43.60
22 A, B	" Vegetable & Potato	.42	9.099	.069	30.02	39.15	48.20
23 A, B	Chittenden's Tob. & Onion	.42	17.158	.082	56.61	46.52	47.20
25 A, B	" Fish & Potash	.42	No inc.	No inc.	—	—	37.20
26 A, B	" Grain & Veg.	.42	2.802	.029	9.24	16.45	38.20
28 A, B	" Grass & Grain	.42	6.061	.055	20.00	31.21	40.80
29 A, B	" Potato & Grain	.42	11.562	.089	38.14	50.50	47.80
31 A, B	" Potato Special	.42	13.020	.098	42.95	55.60	52.00
32 A, B	Coe-Mortimer's Ammo. Super.	.42	20.196	.123	66.63	69.80	66.00
34 A, B	Johnson's Ideal Potato	.42	1.864	.019	6.15	10.78	47.20
36 A, B	Lister's Celebrated Onion	.42	16.227	.092	53.53	52.20	56.00
37 A, B	" 10% Potato Grower	.42	16.606	.090	54.78	51.06	52.00
38 A, B	Lowell Corn & Grain	.42	14.452	.096	47.68	54.47	58.00
39 A, B	" Superior 10% Potash	.42	21.534	.132	71.04	74.89	60.00
41 A, B	National Potato Phos.	.42	22.141	.120	73.05	68.09	63.00
42 A, B	O. & W. Corn & Potato	.42	11.069	.073	36.52	41.42	35.60
44 A, B	" Comp. Grass	.42	16.921	.101	55.82	57.30	39.00
45 A, B	" " Onion	.42	18.425	.110	60.79	62.41	39.00
47 A, B	" " Tobacco	.42	16.022	.094	52.86	53.33	50.00
48 A, B	Royster's Champ. Crop Comp.	.42	13.905	.097	45.87	55.04	56.00
49 A, B	Sanderson's Pot. Manure	.42	18.804	.125	62.04	70.92	62.00
51 A, B	V. C. C. Co.'s Potato & Truck	.42	5.905	.037	19.48	20.99	26.00
52 A, B	" Fish & Potash	.42	No inc.	.005	—	2.84	24.00
54 A, B	Wilcox Grass	.42	2.081	.024	6.87	13.62	44.00
55 A, B	" Superphosphate	.42	.069	.007	.23	3.97	41.00
56 A, B	Worc. Rend. Corn & Grain	.42	17.523	.105	57.81	59.57	49.00
58 A, B	E. D. Chittenden's Tob. Spec.	.42	16.734	.083	55.21	47.09	37.00

*Dried blood (pots 1 A, B, C, D, E, F, G, H), castor pomace (pots 15 A, B), garbage tankage (pots 62 A, B), received their nitrogen as indicated from unwashed material.

A study of the above table shows that in 25 out of 41 cases (61 per cent) the alkaline permanganate method indicates higher nitrogen activities than does the vegetation test; that in 4 cases out of 41 (9.75 per cent) the alkaline permanganate method fails to differentiate between the low and high grade forms of organic ammoniates. In three of these cases the fertilizers were known to contain organic vegetable ammoniates (castor pomace and cottonseed meal). It would appear that the chief criticism of the method is that it sometimes gives too low results with organic *vegetable* ammoniates of good quality. It was hoped that time might be found to test such samples by the pepsin digestion method, but the pressure of other work prevented. The results of the experiment emphasize the necessity of some reliable laboratory method to differentiate between the low and high grade organic ammoniates in fertilizers. The experience at this laboratory would indicate that the alkaline permanganate method serves this purpose better than any other method yet tried both in accuracy and ease of manipulation. In studying this experiment the reader should not lose sight of the fact that we are dealing with that part of the nitrogen only which is insoluble in water. In many cases this is but a small proportion of the total nitrogen which the fertilizer contains. The availability of the water soluble part of the nitrogen in fertilizers is not questioned.

To make this matter plain and to avoid any possibility of injustice to the manufacturer, Table No. 3 has been prepared which shows the total nitrogen as well as the total nitrogen activity of each fertilizer (the total nitrogen activity would include nitrogen as nitrates and ammoniates, soluble organic nitrogen and water insoluble organic nitrogen). In this table there have also been included the percentage of water insoluble nitrogen of each fertilizer and the activity of the water insoluble nitrogen, both by the chemical and vegetation tests.

TABLE NO. 3.

BRAND	Total Nitrogen Present in Fertilizer (Per Cent)	Percentage Activity of Total Nitrogen (Chem. Method)	Water Insoluble Organic Nitrogen		
			Amount Present in Fertilizer (Per Cent)	Comparative Nitrogen Activity by Chemical Method (Alkaline Permanganate)	Relative Nitrogen Activity by Vegetation Methods; Dried Blood at 80 Basis: Nitrogen Recovered
Armour's Special Corn	2.73	76.20	2.26	48.00	16.45
Baugh's Economical Truck	3.55	85.36	1.77	46.40	34.61
Beach Lawn Dressing	4.25	95 54	.73	44.00	8.51
Boston Plant Life	1.74	45.98	1.76	34.00	No inc.
Bradley's Complete Potato & Vegetable	3.17	82.34	2.70	54.20	59.57
Bradley's Green Mountain Special	1.77	86.44	.78	55.80	36.88
Buffalo Farmer's Choice	.96	62.50	1.16	42.40	39.15
Buffalo High Grade Manure	3.28	86.59	1.78	54.80	34.61
Buffalo Tobacco Producer	4.71	80.05	4.26	61.00	50.50
Buffalo 2-8-10	1.84	82.06	.99	43.60	20.43
Buffalo Vegetable and Potato	2.46	88.61	1.04	48.20	39.15
Chittenden's Tobacco and Onion	3.46	84.98	2.19	47.20	46.52
Chittenden's Fish and Potash	2.50	84.80	1.26	37.20	No inc.
Chittenden's Grain and Vegetable	2.99	88.96	1.54	38.20	16.45
Chittenden's Grass and Grain	4.13	93.70	1.50	40.80	31.21
Chittenden's Potato and Grain	3.69	88.62	2.47	47.80	50.50
Chittenden's Potato Special	3.25	88.62	2.35	52.00	55.60
Chittenden's Tobacco Special	4.79	67.86	4.24	37.00	47.09
Coe-Mortimer Ammoniated Superphosphate	1.93	81.35	1.45	66.00	69.80
Johnson Ideal Potato	3.21	81.00	2.30	47.20	10.78
Lister's Celebrated Onion	3.24	86.73	2.44	56.00	52.20
Lister's 10% Potato Grower	3.32	85.55	2.86	52.00	51.06
Lowell Corn and Grain	1.68	84.52	.71	58.00	54.47
Lowell Superior 10% Potash	3.69	79.13	3.13	60.00	74.89
National Potato Phosphate	2.28	88.16	1.02	63.00	68.09
O. & W. Corn and Potato	3.25	74.77	2.50	35.60	41.42
O. & W. Complete Grass	3.70	77.57	2.39	39.00	57.30
O. & W. Complete Onion	3.70	76.22	2.79	39.00	62.41
O. & W. Complete Tobacco	4.77	74.63	2.65	50.00	53.33
Royster's Champion Crop Compound	1.75	82.28	1.07	56.00	55.04
Sanderson's Potato Manure	2.30	73.48	3.01	62.00	70.92
Virginia-Carolina Potato and Truck	1.65	80.00	.98	26.00	20.99
Virginia-Carolina Fish and Potash	1.80	76.11	.91	24.00	2.84
Wilcox Grass	4.52	93.80	1.76	44.00	13.62
Wilcox Superphosphate	1.30	81.54	.78	41.00	3.97
Worcester Rendering Corn and Grain	2.13	81.69	1.18	49.00	59.57

This table shows that some of the fertilizers having a low activity of the water insoluble nitrogen, actually have a high activity of the total nitrogen. This would indicate that a small amount of some low grade organic material had been used perhaps as a conditioner to keep the goods in a suitable mechanical form. Results on other brands indicate that in the selection of the organic ammoniates used in the fertilizer, not enough attention was paid to the activity or availability of the product. The table shows that in the interpretation of results obtained by the laboratory method one should be in possession of the full analytical data relating to the nitrogen. This is emphasized in the discussion as to quality of nitrogen found on page 28 of this bulletin.

DETAILED
TABLES
OF
ANALYSES

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
W. H. Abbott, Holyoke, Mass.				
Abbott's Eagle Brand	Whately	$26.61	1143	4.46
" Onion Fertilizer	Holyoke	26.77	1100	5.71
" Tobacco Fertilizer	Holyoke	28.01	1101	4.35
" " "	Whately		1137	
Alphano Humus Co., Whitall B'l'dg., New York City.				
Prepared Alphano Humus	Fall River	2.95	565	62.16
Prepared Alphano Humus	Boston	5.36	626	28.05
Prepared Alphano Humus	Attleboro	7.03	1228	18.14
American Agric. Chem. Co., 92 State St., Boston, Mass.				
Church's Special Fish and Potash	S. Deerfield	15.73	132	9.40
" " " " "	New Bedford		373	
" " " " "	N. Westport		470	
Complete Fertilizer for Orchards and Small Fruits	Littleton	33.63	1084	4.22
East India A. A. Ammoniated Superphosphate	New Bedford	19.97	374	10.95
Extra Special Grass and Garden Mixture	S. Deerfield	37.41	124	7.73
" " " " " "	Bradstreet		242	
" " " " " "	Concord		669	
Extra Special Grass and Garden Mixture	Greenfield	36.94	873	8.04
Grass and Lawn Top Dressing	Millis	20.34	605	6.59
" " " " "	Norwood		683	
" " " " "	Attleboro		832	
" " " " "	Greenfield		872	
Grass and Lawn Top Dressing	E. Pepperell	21.76	912	7.70
Special A. A. Potato Grower	Enfield	28.92	1190	8.33
Complete Tobacco Manure	S. Deerfield	27.11	130	6.08
" " "	Sunderland		245	
" " "	Sunderland		251	
" " "	N. Hadley		488	
Complete Tobacco Manure	N. Amherst	28.31	1102	5.28
Special High Grade Fertilizer	New Bedford	23.67	369	9.21
" " " "	Amesbury		676	
" " " "	S. Amherst		737	
" " " "	Ipswich		768	
Top Dresser	S. Braintree	24.90	1210	10.31
Valley Special Complete Fertilizer	Bradstreet	25.81	241	8.14
" " " "	Amherst		282	
" " " "	Worcester		979	
Bradley's Corn Phosphate	Bradstreet	17.39	240	10.23
" " "	Marblehead		608	
" " "	Millis		615	
" " "	Beverly		765	
" " "	Belchertown		826	
" " "	Charlton		888	
Bradley's Eclipse Phosphate	Boston	14.02	531	7.35
" " "	Marblehead		613	
" " "	Millis		619	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.30	.41	1.14	.66	2.51	2.50	.29	5.93	9.24	15.46	12.00	6.22	7.00	4.90*	4.00
.89	.74	1.33	.58	3.54	3.50	—	4.90	7.55	12.45	10.00	4.90	7.00	4.03*	3.50
1.58	.85	1.05	.44	3.92	4.00	—	4.04	7.19	11.23	10.00	4.04	7.00	4.65*	4.00
.13	.01	.23	.56	.93	1.25	—	.30	.03	.33	.50	.30	—	.09	.50
.16	—	.53	1.07	1.76	1.25	—	.67	.08	.75	.50	.67	—	.08	.50
.13	—	—	—	2.43	1.25	—	.03	.61	.64	.50	.03	—	.49	.50
.88	.18	.31	.27	1.64	1.65	3.95	4.24	1.45	9.64	9.00	8.19	8.00	2.05	2.00
.82	.29	.92	.74	2.77	2.47	7.76	3.64	1.94	13.34	11.00	11.40	10.00	7.67*	8.00
1.10	.46	.59	.42	2.57	2.47	3.89	5.14	1.63	10.66	10.00	9.03	9.00	2.19	2.00
6.53	.35	.96	.30	8.14	8.23	3.42	3.05	.43	6.90	7.00	6.47	6.00	3.91	4.00
6.41	.56	.67	.34	7.98	8.23	4.53	2.38	.64	7.55	7.00	6.91	6.00	3.64	4.00
3.13	.12	.42	.23	.90	3.91	3.70	1.81	.97	6.48	6.00	5.51	5.00	2.00	2.00
2.82	.12	.50	.47	3.91	3.91	1.28	5.89	.41	7.58	6.00	7.17	5.00	2.27	2.00
2.26	.14	1.08	.49	3.97	3.70	3.51	6.77	1.28	11.56	11.00	10.28	10.00	4.46	4.00
.94	.31	1.82	1.61	4.68	4.53	.83	3.81	.41	5.05	4.00	4.64	3.00	3.45*	3.00
1.00	.49	2.24	1.21	4.94	4.53	1.21	3.66	.26	5.13	4.00	4.87	3.00	3.53*	3.00
2.07	.23	.44	.30	3.04	2.88	4.59	3.99	1.96	10.54	9.00	8.58	8.00	3.84	4.00
3.84	—	.56	.18	4.58	4.94	3.19	4.77	.10	8.06	8.00	7.96	7.00	2.73	3.00
2.11	.43	.54	.43	3.51	3.29	4.08	4.01	2.42	10.51	9.00	8.09	8.00	3.84*	4.00
1.10	.31	.42	.34	2.17	2.06	4.69	4.01	1.81	10.51	9.00	8.70	8.00	1.61	1.50
.29	.14	.42	.32	1.92	2.00	3.48	4.18	2.09	9.75	9.00	7.66	8.00	1.92	2.00

*No. 1143 Chlorine .39% equivalent to .52% potash, 4.38% potash as sulfate.
" 1100 " .64% " " .85% " 3.18% " " "
" 1101-1137 " .59% " " .79% " 3.86% " " "
" 1084 " 1.34% " " 1.77% " 5.90% " " "
" 130-245-251-488 " .20% " " .26% " 3.19% " " "
" 1102 " .35% " " .46% " 3.07% " " "
" 241-282-979 " .67% " " .89% " 2.95% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
American Agricultural Chemical Co., (Continued)				
Bradley's Extra Complete Manure	Boston	$25.97	524	9.26
" " " "	Ipswich		769	
" " " "	Beverly		776	
" " " "	Webster		948	
Bradley's Extra Complete Manure	E. Longmeadow	26.01	1105	9.99
Bradley's Potato Fertilizer	Amherst	20.14	287	10.35
" " "	Marblehead		609	
" " "	Millis		611	
" " "	Ipswich		770	
" " "	Belchertown		825	
" " "	Greenfield		875	
Bradley's Corn and Grain	Sunderland	26.21	249	8.89
" " " "	Boston		540	
Bradley's Special Comp. Manure for Pot. & Veg.	Bradstreet	25.61	239	9.26
" " " " " " "	Sunderland		252	
" " " " " " "	New Bedford		363	
" " " " " " "	Boston		538	
" " " " " " "	Boston		589	
" " " " " " "	Millis		606	
" " " " " " "	Norwood		687	
" " " " " " "	N. Attleboro		842	
Bradley's Special Comp. Man. for Grass & Grain	Boston	26.94	523	8.12
" " " " " " "	Lawrence		645	
" " " " " " "	Belchertown		824	
Bradley's Special English Lawn Fertilizer	Amesbury	27.55	677	7.68
Bradley's Special High Grade Fertilizer	Belchertown	23.04	823	9.28
" " " " "	Greenfield		874	
" " " " "	W. Brookfield		1026	
Bradley's Special Potato Manure	New Bedford	20.56	367	9.52
" " " "	Boston		570	
" " " "	Millis		618	
" " " "	Lawrence		651	
" " " "	N. Attleboro		838	
Bradley's X. L. Superphosphate of Lime	Sunderland	19.97	250	10.94
" " " " "	Amherst		302	
" " " " "	New Bedford		364	
" " " " "	Boston		537	
" " " " "	Lawrence		601	
" " " " "	Marblehead		623	
" " " " "	N. Attleboro		830	
Clark's Cove Bay State Fertilizer	Oakdale	18.96	1006	9.63
Clark's Cove Bay State Fertilizer G. G.	Concord	17.18	671	8.65
Clark's Cove Potato Fertilizer	Concord	19.41	670	9.06
" " " "	Oakdale		1005	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
2.29	.15	.55	.33	3.32	3.29	7.05	3.64	1.17	11.86	11.00	10.69	10.00	3.84	4.00
2.12	.41	.52	.35	3.40	3.29	5.61	4.60	1.07	11.28	11.00	10.21	10.00	3.91	4.00
1.11	.35	.39	.36	2.21	2.06	4.53	3.61	1.94	10.08	9.00	8.14	8.00	3.35	3.00
2.01	.28	.52	.49	3.30	3.29	6.63	3.47	1.15	11.25	11.00	10.10	10.00	4.17	4.00
2.12	.32	.57	.45	3.46	3.29	4.50	3.49	2.09	10.08	9.00	7.99	8.00	4.28	4.00
4.02	.21	.38	.29	4.90	4.94	4.44	3.62	.77	8.83	8.00	8.06	7.00	3.03	3.00
4.28	.30	.34	.26	5.18	4.94	4.50	3.33	.77	8.60	8.00	7.83	7.00	2.97	3.00
1.94	.26	.40	.31	2.91	2.88	4.97	3.52	1.66	10.15	9.00	8.49	8.00	3.78	4.00
1.56	.20	.39	.34	2.49	2.47	4.95	3.55	1.76	10.26	9.00	8.50	8.00	3.06	3.00
1.11	.49	.53	.41	2.54	2.47	4.78	4.21	2.04	11.03	10.00	8.99	9.00	2.13	2.00
1.43	.18	.51	.36	2.48	2.47	4.72	4.52	.84	10.08	10.00	9.24	9.00	2.00	2.00
1.08	.34	.46	.34	2.22	2.06	4.57	3.85	1.53	9.95	9.00	8.42	8.00	1.55	1.50
1.05	.29	.44	.32	2.10	2.06	4.44	4.21	1.33	9.98	9.00	8.65	8.00	3.08	3.00

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
American Agric. Chem. Co., (Continued)				
Clark's Cove Special Great Planet Manure	Oakdale	$25.25	997	10.03
" " " " " "	Spencer		1024	
Clark's Cove Special Potato Manure	Oakdale	21.36	1007	8.01
" " " " "	Spencer		1023	
Darling's Animal Fertilizer	S. Amherst	25.46	738	8.41
Darling's Farm Favorite	S. Amherst	18.89	736	9.59
Darling's Special Blood Bone and Potash	E. Pepperell	28.53	961	9.50
" " " " " "	Worcester		977	
Darling's Special Complete Manure	Westfield	26.48	1180	8.56
Darling's Special General Fertilizer	Pepperell	13.92	957	6.53
Darling's Special General Fertilizer	Westfield	13.84	1181	6.21
Farquhar's Special Lawn and Garden Dressing	Boston	25.05	586	8.93
Farquhar's Special Veg. and Potato Fertilizer	Boston	24.11	627	9.54
Great Eastern General Fertilizer	S. Braintree	19.68	1209	14.94
Great Eastern Potato Manure	N. Wilbraham	19.51	1035	8.88
" " " "	Chelmsford		1067	
Great Eastern Revised Garden Special	E. Pepperell	26.58	959	8.20
Great Eastern Revised Northern Corn Special	Chelmsford	16.54	1014	10.19
" " " " " "	N. Wilbraham		1034	
Pacific Potato Special	Newburyport	19.01	711	9.81
Soluble Pacific Guano	Newburyport	16.48	678	9.79
Packer's Union Special Animal Corn Fert.	Amherst	17.71	845	10.31
" " " " " "	W. Millbury		1117	
Packer's Union Special Potato Manure	Amherst	19.21	846	9.78
Packer's Union Universal Fertilizer	S. Braintree	13.91	1213	9.69
Quinnipiac Corn Manure	Pittsfield	16.38	1149	9.40
Quinnipiac Corn Manure	Southwick	16.31	1176	9.46
Quinnipiac Phosphate	Pittsfield	19.44	1148	11.00
Quinnipiac Potato Phosphate	Fall River	19.59	342	9.72
Quinnipiac Potato Phosphate	Southwick	19.76	1175	8.55
Quinnipiac Special Market Garden Man.	Fall River	24.74	339	8.66
Read's Farmers' Friend	S. Deerfield	19.08	128	9.39
Read's Practical Fertilizer	N. Hadley	14.03	490	6.08
Read's Vegetable and Vine Fertilizer	N. Hadley	21.16	489	9.14
Standard Fertilizer	Whitman	17.02	807	9.65
Standard Guano	Spencer	14.81	1017	6.72
Standard Special Complete Manure	Northboro	25.77	1079	9.66
Standard Special for Potatoes	Whitman	19.24	746	10.56
" " " "	Northboro		1070	
Wheeler's Corn Fertilizer	E. Pepperell	16.79	958	8.55

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
2.26	.28	.43	.32	3.29	3.29	4.53	3.51	1.86	9.90	9.00	8.04	8.00	4.55	4.00
1.77	.21	.35	.29	2.62	2.47	4.95	3.57	1.58	10.10	9.00	8.52	8.00	3.37	3.00
2.35	.16	.42	.41	3.34	3.29	3.86	4.56	.99	9.41	9.00	8.42	8.00	4.69	4.00
1.25	.34	.29	.25	2.13	2.06	4.59	3.57	1.53	9.69	9.00	8.16	8.00	2.95	3.00
2.91	.22	.87	.37	4.37	4.11	4.78	4.38	1.17	10.33	10.00	9.16	9.00	4.05	4.00
1.84	.86	.63	.29	3.62	3.29	6.42	3.18	1.17	10.77	11.00	9.60	10.00	3.74	4.00
.26	.15	.40	.29	1.10	1.03	3.16	4.03	2.27	9.46	9.00	7.19	8.00	2.17	2.00
.19	.06	.61	.41	1.27	1.03	2.68	4.52	2.09	9.29	9.00	7.20	8.00	1.78	2.00
2.16	.28	.52	.41	3.37	3.29	5.20	3.63	1.68	10.51	9.00	8.83	8.00	3.88	4.00
2.00	.27	.39	.27	2.93	2.88	5.61	3.45	1.81	10.87	9.00	9.06	8.00	4.09	4.00
.81	.14	.43	.22	1.60	.82	2.55	5.31	.69	8.55	9.00	7.86	8.00	4.83	4.00
.96	.41	.41	.35	2.13	2.06	4.50	4.02	1.68	10.20	9.00	8.52	8.00	3.00	3.00
2.07	.53	.49	.39	3.48	3.29	4.34	4.08	1.25	9.67	9.00	8.42	8.00	4.81	4.00
.87	.39	.38	.38	2.02	2.06	4.69	3.73	1.68	10.10	9.00	8.42	8.00	1.49	1.50
.83	.32	.44	.37	1.96	2.06	4.31	4.44	1.63	10.38	9.00	8.75	8.00	2.95	3.00
1.11	.24	.40	.35	2.10	2.06	4.34	3.85	1.45	9.64	9.00	8.19	8.00	1.55	1.50
.69	.43	.29	.28	1.69	1.65	5.71	4.50	1.63	11.84	11.00	10.21	10.00	2.04	2.00
.79	.43	.46	.35	2.03	2.06	4.57	4.23	1.40	10.20	9.00	8.80	8.00	2.91	3.00
.46	.19	.25	.18	1.08	.82	3.95	4.83	.74	9.52	9.00	8.78	8.00	1.96	2.00
1.09	.30	.45	.31	2.15	2.06	4.15	4.04	1.15	9.34	9.00	8.19	8.00	1.45	1.50
.93	.40	.47	.26	2.06	2.06	4.46	3.50	1.71	9.67	9.00	7.96	8.00	1.49	1.50
1.44	.25	.46	.45	2.60	2.47	5.65	3.40	1.10	10.15	10.00	9.05	9.00	1.98	2.00
.96	.48	.41	.24	2.09	2.06	4.25	3.94	2.30	10.49	9.00	8.19	8.00	3.14	3.00
.37	.62	.62	.53	2.14	2.06	4.63	3.43	1.35	9.41	9.00	8.06	8.00	3.08	3.00
2.10	.35	.50	.40	3.35	3.29	5.42	3.33	1.66	10.41	9.00	8.75	8.00	3.74	4.00
.82	.42	.40	.33	1.97	2.00	3.99	4.56	1.68	10.23	9.00	8.55	8.00	3.06	3.00
.19	.11	.50	.40	1.20	1.03	2.59	4.83	2.35	9.77	9.00	7.42	8.00	1.90	2.00
1.76	.30	.37	.23	2.66	2.47	4.50	3.69	1.84	10.03	9.00	8.19	8.00	3.26	3.00
.93	.47	.40	.34	2.14	2.06	3.76	4.71	1.81	10.28	9.00	8.47	8.00	1.53	1.50
.20	.17	.56	.36	1.29	1.03	2.53	5.33	2.12	9.98	9.00	7.86	8.00	2.04	2.00
2.33	.25	.38	.37	3.33	3.29	3.99	4.28	2.19	10.46	9.00	8.27	8.00	4.65	4.00
.86	.39	.44	.36	2.05	2.06	3.95	4.29	1.84	10.08	9.00	8.24	8.00	3.08	3.00
.59	.23	.60	.43	1.85	1.65	4.06	3.97	2.17	10.20	9.00	8.03	8.00	1.96	2.00

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
American Agricultural Chem. Co., (Concluded)				
Wheeler's Potato Manure	E. Pepperell	$19.32	960	9.00
" " "	Ludlow		1063	
Wheeler's Special Havana Tobacco Grower	N. Wilbraham	21.09	1033	8.16
" " " " "	Ludlow		1062	
Williams and Clark Ammo. Bone Superphos	Southboro	18.86	920	9.67
Williams and Clark Americus Corn Phos	Norwood	16.53	682	10.83
" " " " " "	Hamilton		774	
Williams and Clark Americus Corn Phos	Wilkinsonville	17.15	1120	8.53
Williams and Clark H. G. Spec. Pot. and Root Crop	Norwood	25.55	688	9.65
Williams and Clark H. G. Spec. Pot. & Root Crop	Westfield	24.77	1182	9.33
Williams and Clark Americus Potato Manure	Norwood	19.02	681	9.71
" " " " " "	Southboro		939	
Williams and Clark Americus Potato Manure	Wilkinsonville	17.68	1119	12.07
Williams and Clark Royal Bone Phosphate	Newburyport	14.00	679	8.07
Williams and Clark Potato Phosphate	Hamilton	21.82	773	13.94
Williams and Clark Spec. Prolific Crop Prod.	Worcester	11.95	1080	6.83
Armour Fertilizer Works, Baltimore, Md.				
All Soluble	N. Hadley	22.09	170	8.74
" "	Amherst		283	
" "	Taunton		388	
Ammoniated Bone with Potash	S. Fram'ham	17.26	717	8.22
" " " "	Woburn		748	
" " " "	Billerica		799	
" " " "	Webster		955	
Fish and Potash	Taunton	16.52	410	6.39
" " "	Woburn		749	
" " "	Brockton		817	
Five-Eight-Four	Brockton	27.39	818	8.38
" " "	Webster		949	
Five-Eight-Three	N. Hadley	25.50	117	7.84
" " "	N. Hadley		172	
Five and One Half-Four-Three	N. Hadley	25.48	115	6.55
" " " " "	N. Hadley		164	
" " " " "	Amherst		284	
Grain Grower	S. Fram'ham	16.40	716	6.55
" "	Woburn		747	
" "	Brockton		792	
" "	Webster		950	
" "	Hudson		1114	
Three-Eight-Three	Taunton	20.03	390	6.97
" " "	S. Fram'ham		718	
" " "	Billerica		802	
Baugh and Sons Co., Philadelphia, Pa.				
Complete Animal Base Fertilizer	Marblehead	19.76	622	10.63
Complete Animal Base Fertilizer	Rockland	20.69	751	11.90

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.09	.19	.56	.27	2.11	2.06	4.59	3.68	1.40	9.67	9.00	8.27	8.00	3.16	3.00
1.71	.31	.34	.28	2.64	2.47	5.17	2.89	1.99	10.05	9.00	8.06	8.00	3.22	3.00
1.22	.43	.46	.34	2.45	2.47	3.95	4.34	2.40	10.69	10.00	8.29	9.00	1.98	2.00
1.14	.15	.53	.29	2.11	2.06	3.70	4.18	1.73	9.61	9.00	7.88	8.00	1.67	1.50
1.55	.05	.29	.26	2.15	2.06	4.53	3.56	1.86	9.95	9.00	8.09	8.00	1.98	1.50
2.16	.18	.57	.36	3.27	3.29	6.12	3.04	1.76	10.92	9.00	9.16	8.00	4.19	4.00
2.19	.23	.48	.39	3.29	3.29	3.99	3.84	2.07	9.90	9.00	7.83	8.00	4.30	4.00
1.05	.25	.45	.29	2.04	2.06	3.99	4.48	1.99	10.46	9.00	8.47	8.00	2.93	3.00
1.17	.22	.31	.22	1.92	2.06	4.08	3.62	1.56	9.26	9.00	7.70	8.00	2.89	3.00
.37	.17	.29	.28	1.11	1.03	3.67	3.88	2.55	10.10	9.00	7.55	8.00	2.00	2.00
1.44	.18	.62	.31	2.55	2.47	1.79	4.18	1.66	7.63	7.00	5.97	6.00	4.86	5.00
.34	.16	.20	.19	.89	.82	4.53	3.64	1.58	9.75	9.00	8.17	8.00	1.20	1.00
1.37	.27	.66	.46	2.76	2.88	4.12	2.85	1.79	8.76	8.50	6.97	8.00	3.93	4.00
.79	.27	.64	.68	2.38	2.47	3.83	2.23	1.20	7.26	6.50	6.06	6.00	2.23	2.00
.51	.39	.60	.56	2.06	2.05	4.63	1.31	1.25	7.19	6.50	5.94	6.00	2.34	2.00
1.23	.50	1.57	.74	4.04	4.11	5.74	2.04	1.84	9.62	8.50	7.78	8.00	3.68	4.00
1.25	.69	1.12	.93	3.99	4.11	3.80	2.94	2.50	9.24	8.50	6.74	8.00	3.08	3.00
.86	.43	1.44	1.43	4.16	4.52	3.29	2.14	.59	6.02	4.50	5.43	4.00	3.20*	3.00
.68	.20	.44	.44	1.76	1.65	4.82	2.79	1.22	8.83	8.50	7.61	8.00	2.29	2.00
1.13	.22	.56	.47	2.38	2.47	5.74	1.53	1.43	8.70	8.50	7.27	8.00	3.33	3.00
.94	.40	.22	.41	1.97	1.65	7.97	2.77	1.76	12.50	—	10.74	10.00	2.36	3.00
1.03	.24	.24	.38	1.89	1.65	9.12	1.95	1.15	12.22	—	11.07	10.00	3.06	3.00

No. 115-164-284 Chlorine .33% equivalent to .44% potash, 2.76% potash as sulfate.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Baugh and Sons Co. (Concluded).				
Grand Rapid High Grade Guano	N. Hanover	$21.29	806	9.34
High Grade Potato Grower	Rockland	22.72	803	9.51
Beach Soap Company, Lawrence, Mass.				
Advance Brand	Lawrence	23.41	600	12.38
" "	Ipswich		710	
Lawn Dressing	Lawrence	30.10	649	8.04
Market Garden Fertilizer	Lawrence	31.19	599	7.80
Reliance Fertilizer	Lawrence	20.77	648	11.33
Top Dressing	Lawrence	38.14	647	8.11
" "	Ipswich		767	
Baltimore Pulverizing Co., Baltimore, Md.				
Market Garden Fertilizer	Teaticket	21.35	1225	8.07
Market Garden Fertilizer	Teaticket	21.42	1226	9.74
Berkshire Fertilizer Co., Bridgeport, Conn.				
Berkshire Ammoniated Bone Phosphate	Upton	14.20	882	12.05
Berkshire Complete Fertilizer	N. Hadley	21.94	121	7.87
" " "	S. Deerfield		125	
" " "	N. Hadley		137	
" " "	N. Hadley		138	
" " "	N. Amherst		179	
" " "	Bradstreet		208	
" " "	E. Whately		491	
" " "	S. Amherst		733	
Berkshire Complete Tobacco Fertilizer	N. Hadley	22.59	159	5.73
" " " "	N. Hadley		165	
" " " "	N. Amherst		181	
" " " "	Bradstreet		212	
" " " "	N. Hadley		233	
Berkshire Complete Tobacco Fertilizer	Bradstreet	23.22	269	5.97
" " " "	Bradstreet		278	
" " " "	Bradstreet		508	
" " " "	Bradstreet		522	
Berkshire Economical Grass Fertilizer	N. Hadley	35.78	142	4.62
" " " "	N. Hadley		143	
" " " "	N. Hadley		166	
" " " "	N. Hadley		226	
" " " "	N. Hadley		479	
Berkshire Fish and Potash	N. Hadley	20.89	139	5.52
" " " "	N. Hadley		148	
" " " "	Sunderland		183	
Berkshire Grass Special	N. Hadley	24.70	118	6.03
" " "	Sunderland		184	
" " "	Westfield		896	
Berkshire Long Island Special	N. Hadley	26.18	116	8.99
" " " "	N. Amherst		236	
" " " "	Amherst		652	
" " " "	N. Amherst		851	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.25	.31	.30	.56	2.42	2.47	5.55	2.52	2.47	10.54	—	8.07	8.00	3.47	3.00
2.65	.13	.20	.39	3.37	3.30	5.68	2.08	2.32	10.08	—	7.76	8.00	3.00	3.00
1.76	.31	.43	.43	2.93	2.50	4.08	4.80	4.54	13.42	10.00	8.88	8.00	3.08	2.75
3.66	.18	.20	.17	4.21	4.00	3.23	3.83	3.88	10.94	9.50	7.06	7.50	6.01	5.25
3.76	.56	.37	.34	5.03	4.74	2.78	4.09	2.93	9.80	8.00	6.87	7.00	4.86*	3.75
1.42	.35	.37	.35	2.49	1.65	2.49	5.91	5.10	13.50	10.00	8.40	8.00	2.46*	1.75
4.50	.58	.31	.30	5.69	5.00	4.82	4.82	2.27	11.91	10.00	9.64	8.00	7.00*	4.75
1.80	—	.15	.29	2.24	2.46	4.60	3.66	.77	9.03	—	8.26	8.00	4.44	4.00
1.16	.05	.52	.68	2.41	2.46	6.68	2.11	.27	9.06	—	8.79	8.00	3.61	4.00
.52	.25	.14	.22	1.13	.80	4.15	4.14	.77	9.06	9.00	8.29	8.00	2.23	2.00
1.19	.20	.71	.69	2.79	2.50	2.78	5.64	.89	9.31	9.00	8.42	8.00	3.39	3.00
1.04	.42	.83	.59	2.88	2.50	2.46	5.56	1.22	9.24	9.00	8.02	8.00	3.24*	3.00
.96	.53	.72	.63	2.84	2.50	2.91	5.30	1.05	9.26	9.00	8.21	8.00	3.60*	3.00
7.11	.45	.34	.28	8.18	8.00	.70	5.93	.74	7.37	8.00	6.63	4.00	3.16	2.00
.41	.19	1.13	.98	2.71	2.50	2.14	2.88	2.07	7.09	6.00	5.02	4.00	3.72	3.00
4.71	.11	.36	.35	5.53	5.00	1.95	2.59	.54	5.08	5.00	4.54	4.00	2.27	2.00
1.77	.51	.74	.74	3.76	3.30	1.34	5.60	1.61	8.55	8.00	6.94	6.00	4.52	4.00

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* No. 599 Chlorine 1.52% equivalent to 2.02% potash, 2.84% potash as sulfate.
" 648 " 1.54% " " 2.04% " .42% " " "
" 647-767 " 4.98% " " 6.61% " .39% " " "
" 159-165-181-212-233 " .47% " " .63% " 2.61% " " "
" 269-278-508-522 " .38% " " .50% " 3.10% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturerer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture
Berkshire Fertilizer Co. (Concluded).				
Berkshire Long Island Special	N. Hadley	$31.57	481	7.04
Berkshire Potato and Vegetable Phosphate	Upton	16.73	878	9.34
Berkshire Tobacco Special	N. Hadley	28.71	140	7.26
" " "	N. Hadley		169	
" " "	Sunderland		265	
" " "	Sunderland		298	
" " "	Hatfield		360	
" " "	S. Amherst		734	
Berkshire Tobacco Special	N. Hadley	28.39	480	9.92
Berkshire Tobacco Special	N. Hadley	28.68	1223	10.98
C. M. Bolles, East Pepperell, Mass.				
Nissitissitt Plant Food	Pepperell	30.96	956	6.35
Boston Humus Co., East Lexington, Mass.				
Boston Humus	East Lexington	3.78	812	35.63
Boston Humus	Winchester	4.84	1260	17.43
Boston Plant Life	East Lexington	4.69	813	9.87
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.				
Bowker's All Round Fertilizer	Fall River	20.25	330	8.28
" " " "	Dighton		542	
" " " "	Bridgewater		659	
" " " "	Enfield		829	
" " " "	Ayer		915	
" " " "	Springfield		975	
" " " "	W. Boylston		1001	
" " " "	Hudson		1108	
Bowker's Ammoniated Food for Flowers	Boston	18.43	794	3.09
Bowker's Blood Bone and Potash (Revised)	Boston	29.00	591	9.33
Bowker's Brighton Phosphate	Lawrence	11.42	643	8.45
Bowker's Corn Phosphate	Taunton	17.67	443	8.29
" " "	Dighton		546	
" " "	Milford		886	
Bowker's Farm and Garden Phosphate	Fall River	15.81	328	9.22
" " " " "	Boston		582	
" " " " "	Bridgewater		705	
" " " " "	Milford		877	
" " " " "	Springfield		972	
Bowker's High Grade Fertilizer	Beverly	22.32	772	9.12
Bowker's Hill and Drill Phosphate	Bridgewater	20.00	660	9.40
" " " " "	Northampton		788	
" " " " "	Leominster		1016	
Bowker's Lawn and Garden Dressing (Revised)	Boston	26.96	590	7.02
" " " " " "	Northampton		786	
" " " " " "	Springfield		995	
Bowker's Potato and Vegetable Fert. (Revised)	Fall River	23.73	343	8.78
" " " " " "	Taunton		432	
" " " " " "	Dighton		548	
" " " " " "	Boston		588	
" " " " " "	Northampton		787	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.16	1.18	1.15	1.14	4.63	3.30	4.53	3.69	2.55	10.77	8.00	8.22	6.00	4.52	4.00
.23	.49	.58	.57	1.87	1.70	1.85	6.44	.74	9.03	9.00	8.29	8.00	2.07	2.00
1.00	.30	2.08	1.67	5.05	4.50	.51	3.65	.74	4.90	4.00	4.16	3.00	3.72*	3.00
1.27	.25	1.76	1.54	4.82	4.50	1.08	3.46	1.28	5.82	4.00	4.54	3.00	3.82*	3.00
1.01	.76	1.82	1.48	5.07	4.50	.32	4.58	—	4.90	4.00	4.90	3.00	3.59*	3.00
2.19	.55	.90	.62	4.26	4.00	3.16	5.36	6.89	15.41	14.00	8.52	4.50	4.40	4.25
.20	—	.37	1.02	1.59	1.50	—	—	—	.84	.50	—	—	—	—
—	—	—	—	1.95	1.50	—	—	—	1.01	.50	—	—	—	—
.23	.05	.54	1.09	1.91	1.50	—	.63	.10	.73	.50	.63	—	—	—
1.71	.23	.37	.27	2.58	2.47	4.38	3.70	1.56	9.64	9.00	8.08	8.00	3.00	3.00
2.38	—	.05	.05	2.48	2.47	.23	6.55	.87	7.65	7.00	6.78	6.00	3.37	2.00
2.88	.59	.66	.33	4.46	4.11	5.01	4.82	.94	10.77	11.00	9.83	10.00	3.88	4.00
.37	.11	.21	.15	.84	.82	4.31	4.13	1.25	9.69	9.00	8.44	8.00	.99	1.00
1.13	.13	.41	.30	1.97	1.65	3.70	5.05	1.48	10.23	9.00	8.75	8.00	2.36	2.00
.79	.22	.34	.26	1.61	1.65	4.18	4.47	1.12	9.77	9.00	8.65	8.00	2.00	2.00
1.60	—	.65	.36	2.61	2.47	5.29	3.18	.99	9.46	9.00	8.47	8.00	4.01	4.00
1.29	.23	.59	.37	2.48	2.47	4.50	4.99	1.89	11.38	10.00	9.49	9.00	2.21	2.00
3.90	.34	.38	.29	4.91	4.94	4.44	3.52	.69	8.65	8.00	7.96	7.00	3.02	3.00
1.87	.28	.46	.36	2.97	2.88	5.01	3.25	1.89	10.15	9.00	8.26	8.00	4.05	4.00

* No. 140-169-265+ Chlorine .45% equivalent to .59% potash, 3.13% potash as sulfate.
" 480 " .36% " " .48% " 3.34% " " "
" 1223 " .27% " " .36% " 3.23% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Bowker Fertilizer Co. (Concluded).				
Bowker's Potato and Vegetable Fertilizer	West Boylston	$22.54	976	9.30
Bowker's Potato Phosphate	Taunton	16.73	449	8.18
" " "	Dighton		547	
Bowker's Pulverized Sheep Manure	Newburyport	18.71	675	14.85
Bowker's Special Comp. Alkaline Tobacco Grower	Sunderland	26.35	223	5.19
" " " " " "	Sunderland		261	
" " " " " "	Hadley		321	
" " " " " "	Hatfield		358	
Bowker's Square Brand Fertilizer	Fall River	20.32	376	9.18
" " " "	Taunton		435	
" " " "	Dighton		549	
" " " "	N. Attleboro		835	
Bowker's Sure Crop Phosphate	Lawrence	14.56	603	8.27
" " " "	Enfield		828	
" " " "	Leominster		1015	
Stockbridge Cereal Manure for Corn and Grain	Taunton	26.86	438	8.85
" " " " " " "	Dighton		551	
" " " " " " "	Hatfield		695	
" " " " " " "	Bridgewater		704	
" " " " " " "	Northampton		789	
" " " " " " "	N. Attleboro		843	
" " " " " " "	Charlton		892	
Stockbridge Cereal Manure for Corn and Grain	Springfield	26.45	996	7.94
" " " " " " "	W. Boylston		1002	
Stockbridge Early Crop Manure	Dighton	28.00	544	7.52
" " " "	Lawrence		635	
" " " "	Norwood		686	
" " " "	Hatfield		694	
" " " "	N. Attleboro		839	
" " " "	Milford		879	
" " " "	Ayer		914	
Stockbridge Early Crop Manure	Bridgewater	26.82	706	10.05
" " " "	Enfield		827	
Stockbridge General Crop Manure	Sunderland	25.13	224	8.65
" " " "	Sunderland		263	
" " " "	Fall River		378	
" " " "	Hatfield		382	
" " " "	Dighton		541	
" " " "	Boston		581	
" " " "	N. Attleboro		836	
Stockbridge General Crop Manure	Springfield	25.38	973	8.99
Joseph Breck & Sons Corporation, Boston, Mass.				
Breck's Market Garden Manure	Boston	19.96	535	10.46

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
2.07	.06	.50	.28	2.91	2.88	4.31	4.00	1.15	9.46	9.00	8.31	8.00	3.78	4.00
.86	.29	.35	.30	1.80	1.65	3.67	4.80	1.30	9.77	9.00	8.47	8.00	2.21	2.00
.29	.52	.50	1.10	2.41	2.06	—	—	—	2.04	1.25	—	—	4.38	1.00
1.02	.06	1.93	1.24	4.25	4.11	1.44	4.99	.51	6.94	5.00	6.43	4.00	3.33*	3.00
.95	.34	.51	.47	2.27	2.06	3.89	4.74	1.63	10.26	9.00	8.63	8.00	3.16	3.00
.37	.08	.31	.25	1.01	.82	4.59	4.46	1.84	10.89	10.00	9.05	9.00	2.05	2.00
2.30	.21	.49	.48	3.48	3.29	6.38	4.18	1.07	11.63	11.00	10.56	10.00	4.13	4.00
1.95	.25	.81	.39	3.40	3.29	5.52	5.20	1.17	11.89	11.00	10.72	10.00	3.86	4.00
3.61	.68	.43	.30	5.02	4.94	4.89	3.41	.94	9.24	8.00	8.30	7.00	3.02	3.00
4.06	.17	.45	.44	5.12	4.94	3.89	4.07	.51	8.47	8.00	7.96	7.00	2.62	3.00
2.12	.30	.55	.34	3.31	3.29	4.59	3.90	2.07	10.56	9.00	8.49	8.00	4.13	4.00
2.28	.26	.57	.26	3.37	3.29	4.97	3.63	1.07	9.67	9.00	8.60	8.00	4.38	4.00
.97	.62	.46	.41	2.46	2.47	3.87	5.11	2.55	11.53	10.00	8.98	9.00	2.17	2.00

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* No. 223-261-321-358 Chlorine .55% equivalent to .73% potash, 2.60% potash as sulfate.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Joseph Breck & Sons Corp. (Concluded).				
Ram's Head Brand Sheep Manure	Boston	$14.09	530	6.34
Ram's Head Brand Sheep Manure	Brockton	13.74	658	9.23
Ram's Head Brand Sheep Manure	N. Abington	16.96	1252	6.64
Breck's Special Lawn and Garden Dressing	Boston	24.87	539	8.88
Carter's Tested Seeds Inc., Boston, Mass.				
Carter's Anti Clover Manure	Boston	32.46	61	10.26
" " " "	Boston		628	
Carter's Complete Grass Manure	Boston	27.25	59	4.02
Carter's Complete Grass Manure	Boston	28.44	1188	6.90
Carter's General Purpose Manure	Boston	22.07	60	10.08
" " " "	Boston		631	
Carter's Worm Eradicating Fertilizer	Boston	14.72	62	7.89
Carter's Worm Eradicating Fertilizer	Boston	13.53	1187	11.46
The E. D. Chittenden Co., Bridgeport, Conn.				
Chittenden's Complete Tobacco and Onion Grower	Bradstreet	23.78	207	4.22
" " " " " "	Sunderland		253	
" " " " " "	Sunderland		326	
" " " " " "	E. Whately		492	
Chittenden's Complete Tobacco and Onion Grower	Hatfield	24.80	307	4.84
" " " " " "	Hatfield		308	
" " " " " "	Hadley		313	
" " " " " "	Southbridge		941	
Chittenden's Special Formula Fish and Potash	Hadley	18.57	312	7.04
" " " " " "	Concord		662	
" " " " " "	Bedford		811	
" " " " " "	Charlton		889	
" " " " " "	Southbridge		922	
" " " " " "	Oxford		928	
" " " " " "	N. Wilbraham		1036	
Chittenden's Grain and Vegetable	Fall River	21.80	380	8.05
" " " "	Concord		668	
" " " "	Southbridge		931	
Chittenden's Grass and Grain	Fall River	25.70	331	7.47
" " " "	Concord		672	
" " " "	Bedford		821	
" " " "	Charlton		890	
" " " "	Oxford		926	
Chittenden's Potato and Grain	Fall River	24.04	377	6.01
" " " "	Leominster		868	
" " " "	Charlton		887	
Chittenden's Potato and Grain	Southbridge	24.60	937	6.25
Chittenden's Potato Special	Fall River	26.55	379	7.51
" " "	Concord		667	
" " "	Leominster		858	
" " "	N. Grafton		883	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.			
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.22	.39	.47	1.26	2.34	2.67	—	—	—	1.79	1.50	—	—	2.08	1.75
.39	.48	.41	1.22	2.50	2.25	—	—	—	1.44	1.50	—	—	1.84	2.00
—	—	—	—	2.42	2.25	—	—	—	2.16	1.50	—	—	3.29	2.00
2.23	.29	.43	.34	3.29	3.29	4.18	4.29	1.17	9.64	9.00	8.47	8.00	4.32	4.00
6.35	.11	.23	.11	6.80	6.58	5.10	1.61	1.73	8.44	7.00	6.71	4.50	3.41	2.00
2.96	.37	.68	.47	4.48	4.52	6.95	3.25	4.16	14.36	12.00	10.20	10.00	1.82	1.25
3.50	.39	.60	.40	4.89	4.52	5.46	5.81	2.02	13.29	12.00	11.27	10.00	1.80	1.25
2.96	—	.30	.28	3.54	3.29	6.67	1.87	.77	9.31	6.00	8.54	5.00	2.35	2.00
.16	.13	.78	1.78	2.85	2.51	.38	.21	.10	.69	1.00	.59	—	1.94*	1.19
.16	.18	.75	1.46	2.55	2.51	.26	.68	—	.94	1.00	.94	—	1.80*	1.19
2.35	.33	.37	.29	3.34	3.30	5.55	2.84	.77	9.16	9.00	8.39	8.00	3.35*	3.00
2.36	.25	.36	.33	3.30	3.30	5.36	3.14	.61	9.11	9.00	8.50	8.00	3.93*	3.00
.83	.37	.73	.62	2.55	2.47	4.69	1.79	1.33	7.81	7.00	6.48	6.00	2.36	2.00
1.80	.62	.19	.13	2.74	2.47	6.63	2.23	.94	9.80	9.00	8.86	8.00	3.29	3.00
2.47	.33	.61	.70	4.11	4.09	5.14	2.49	.84	8.47	7.00	7.63	6.00	3.45	3.00
2.65	.14	.27	.26	3.32	3.30	6.38	1.96	1.05	9.39	9.00	8.34	8.00	3.72*	3.00
2.67	.06	.46	.35	3.54	3.30	6.16	2.52	.48	9.16	9.00	8.68	8.00	3.60*	3.00
2.71	.30	.30	.29	3.60	3.30	6.22	2.53	1.33	10.08	9.00	8.75	8.00	4.53*	4.00

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* No. 62 Chlorine .65% equivalent to .86% potash, 1.08% potash as sulfate.
" 1187 " .60% " " .80% " 1.00% " " "
" 207-253+ " .53% " " .70% " 2.65% " " "
" 307-308+ " 1.08% " " 1.44% " 2.49% " " "
" 377-868-887 " 1.57% " " 2.09% " 1.63% " " "
" 937 " 1.65% " " 2.19% " 1.41% " " "
" 379-667+ " 3.19% " " 4.24% " .29% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
The E. D. Chittenden Co. (Concluded).				
Chittenden's Potato Special	Oxford	$25.96	927	7.89
" " "	Southbridge		936	
" " "	N. Wilbraham		1038	
Chittenden's Tobacco Special	N. Hadley	25.81	135	5.50
" " "	N. Hadley		141	
" " "	N. Hadley		167	
" " "	Hadley		320	
" " "	E. Whately		494	
Clay and Sons, Stratford, England.				
Clay's Fertilizer	Boston	22.36	572	8.63
" "	Boston		584	
Coe-Mortimer Co., 51 Chambers St., New York City.				
E. Frank Coe's Blood, Bone and Potash Spec.	W. Millbury	27.76	1098	11.00
" " " " " " "	Hadley		1130	
" " " " " " "	Easthampton		1134	
" " " " " " "	S. Wil'm'town		1160	
E. Frank Coe's Blue Brand Excelsior Guano	Haydenville	25.75	630	10.55
" " " " " "	W. Millbury		1083	
" " " " " "	Hadley		1129	
E. Frank Coe's Columbian Corn and Pot. Spec.	Westfield	16.87	901	9.38
" " " " " " "	Williamsburg		1040	
" " " " " " "	Belchertown		1194	
E. Frank Coe's Double Strength Pot. Man. Spec.	Haydenville	27.79	1045	11.03
E. Frank Coe's Double Strength Top Dressing	Auburn	35.89	1081	7.10
E. Frank Coe's Double Strength Top Dressing	Belchertown	32.77	1193	7.86
E. Frank Coe's Excelsior Potato Fertilizer	Williamsburg	23.09	1044	10.19
" " " " "	Westford		1091	
" " " " "	S. Wil'm'town		1156	
E. Frank Coe's Ammoniated Super. Special	Westfield	19.75	902	10.72
" " " " "	Westford		1092	
" " " " "	W. Millbury		1115	
E. Frank Coe's Ideal Tobacco Fert. Special	Hadley	26.94	1131	6.19
E. Frank Coe's Ideal Tobacco Fert. Special	Easthampton	28.17	1133	7.29
E. Frank Coe's New Englander Spec. (Revised)	Williamsburg	14.09	1042	9.74
E. Frank Coe's Prolific Crop Producer	Wrentham	19.02	1216	13.51
E. Frank Coe's Reliable Crop Grower	Williamsburg	17.54	632	11.83
E. Frank Coe's Spec. Grass Top Dress. Revised	Williamsburg	27.28	1046	9.79
" " " " " " "	W. Millbury		1116	
" " " " " " "	Easthampton		1127	
E. Frank Coe's Standard Potato Fert. Spec.	Warren	25.29	1012	10.81
" " " " " "	Westford		1093	
E. Frank Coe's XXV Ammoniated Phos.	Belchertown	14.69	1191	9.32
Eastern Chemical Co., 37 Pittsburgh St., Boston, Mass.				
I M P Plant Food	Boston	109.56	793	.44

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
2.41	.24	.36	.36	3.37	3.30	7.56	1.95	.87	10.38	9.00	9.51	8.00	4.26*	4.00
3.02	.31	.67	.87	4.87	4.50	1.76	2.11	.59	4.46	4.00	3.87	3.00	3.39*	3.00
2.45	—	1.45	1.18	5.08	4.00	.42	2.94	5.26	8.62	7.00	3.36	1.24	.16	.08
2.42	.15	.86	.56	3.99	4.11	4.97	5.39	.87	11.23	11.00	10.36	10.00	3.78	4.00
2.14	.37	.50	.29	3.30	3.29	5.78	4.45	.77	11.00	11.00	10.23	10.00	4.04	4.00
.96	.18	.42	.23	1.79	1.23	5.04	4.15	1.07	10.26	10.00	9.19	9.00	2.04	2.00
2.47	.34	.63	.38	3.82	3.70	5.78	4.52	.77	11.07	11.00	10.30	10.00	4.21	4.00
6.60	—	.67	.26	7.53	8.23	3.54	2.66	.74	6.94	7.00	6.20	6.00	4.45	4.00
4.75	.91	.51	.35	6.52	8.23	3.99	3.56	.59	8.14	7.00	7.55	6.00	3.45	4.00
1.79	.28	.47	.30	2.84	2.88	4.12	4.61	1.17	9.90	9.00	8.73	8.00	3.96	4.00
.82	.63	.40	.33	2.18	2.06	4.40	4.22	1.58	10.20	9.00	8.62	8.00	2.95	3.00
.72	.51	2.16	1.29	4.68	4.53	.80	4.10	.15	5.05	4.00	4.90	3.00	3.30*	3.00
.94	.67	1.76	1.42	4.79	4.53	.83	4.33	.20	5.36	4.00	5.16	3.00	3.55*	3.00
.27	.28	.28	.18	1.01	.82	3.19	5.59	1.53	10.31	10.00	8.78	9.00	2.00	2.00
1.20	.39	.50	.34	2.43	2.47	4.25	5.01	1.53	10.79	10.00	9.26	9.00	1.90	2.00
.79	.34	.28	.27	1.68	1.65	4.82	5.34	1.25	11.41	11.00	10.16	10.00	2.17	2.00
3.44	.67	.59	.24	4.94	4.94	2.53	5.58	.41	8.52	8.00	8.11	7.00	3.04	3.00
1.86	.52	.51	.36	3.25	3.29	4.69	4.06	1.45	10.20	9.00	8.75	8.00	4.16	4.00
.31	.29	.25	.23	1.08	.82	4.27	4.61	1.53	10.41	9.00	8.88	8.00	2.10	2.00
13.00	—	—	—	13.00	13.00	27.62	.52	.18	28.32	25.30	28.14	25.30	25.28†	24.60

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* No. 927-936-1038 Chlorine 2.97% equivalent to 3.95% potash, .31% potash as sulfate.
" 135-141-167+ " .54% " " .72% " 2.67% " " "
" 1131 " .40% " " .53% " 2.77% " " "
" 1133 " .43% " " .57% " 2.30% " " " .68% potash as carbonate.

† " 793 Potash as Nitrate valued at 9½ cents per pound.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Essex Fertilizer Co., 39 N. Market St., Boston, Mass.				
Essex Comp. Manure for Corn, Grain and Grass	Easthampton	$24.64	575	7.01
" " " " " " " "	Whitman		791	
" " " " " " " "	Leominster...		856	
Essex Comp. Manure for Corn, Grain and Grass	Spencer......	24.20	1020	6.40
Essex Comp. Man. for Potatoes, Roots & Vegetables .	Taunton.....	24.51	419	6.90
" " " " " " " " .	Whitman		795	
" " " " " " " " .	Spencer......		1022	
Essex Grain, Grass and Potato Fertilizer	S. Lowell	14.94	756	7.20
" " " " " "	Whitman		801	
Essex Grain, Grass and Potato Fertilizer	Webster	16.74	985	5.64
Essex Market Garden and Potato Manure	S. Lowell	20.71	760	7.79
" " " " " "	Leominster...		869	
" " " " " "	Holyoke		907	
Essex Market Garden and Potato Manure	Webster	21.32	954	7.78
" " " " " "	Spencer......		1021	
Essex New Tobacco Fertilizer with Cottonseed Meal...	Easthampton	26.11	580	8.81
Essex Special Corn Fertilizer	S. Lowell	18.71	762	5.17
" " " "	Webster		987	
Essex Special Potato Phosphate....................	Whitman	21.73	809	7.38
" " " "	Spencer......		1019	
" " " "	Marlboro		1112	
Essex Grass and Top Dressing	Taunton.....	27.70	418	7.00
" " " " "	Holyoke		908	
Essex XXX Fish and Potash	Taunton.....	19.11	391	6.33
" " " " "	Easthampton		576	
" " " " "	Whitman		810	
Essex XXX Fish and Potash	Webster	20.29	986	4.76
" " " " "	Marlboro		1107	
R. & J. Farquhar and Co., Boston, Mass.				
Pulverized Sheep Manure........................	Boston	9.88	633	27.17
John Glennie, Ward Hill, Mass.				
Complete Fertilizer..............................	Marblehead ..	30.69	612	7.04
Chas. W. Hastings, Stoughton, Mass.				
Ferti Flora.....................................	Boston	19.86	782	81.39
Thomas Hersom and Co., New Bedford, Mass.				
Hersom's Neverfail Fertilizer......................	New Bedford	32.56	394	5.16
" " "	New Bedford		395	
International Agricultural Corp., Buffalo, N. Y.				
Buffalo Fertilizer Works Branch.				
Buffalo Farmer's Choice	Springfield ...	16.48	993	10.15
" " "	W. Boylston..		999	
Buffalo Five-Eight-Four	N. Amherst ..	27.33	194	10.94
" " " "	Taunton.....		440	
" " " "	S. Amherst...		732	
Buffalo High Grade Manure	Taunton.....	27.40	433	6.59
" " " "	Springfield ...		994	
" " " "	W. Boylston..		1000	
Buffalo New England Special	W. Boylston..	18.45	998	6.67
" " " "	Chelmsford...		1064	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.86	.70	.43	.29	3.28	3.20	6.42	1.77	1.07	9.26	9.00	8.19	8.00	4.03	4.00
1.93	.70	.36	.24	3.23	3.20	5.80	2.39	.89	9.08	9.00	8.19	8.00	4.00	4.00
1.83	.79	.49	.20	3.31	3.29	5.97	2.19	.77	8.93	9.00	8.16	8.00	3.99	4.00
.03	.48	.18	.18	.87	.82	6.35	1.56	.89	8.80	9.00	7.91	8.00	3.02	3.00
.28	.55	.28	.19	1.30	.82	5.42	2.67	.92	9.01	9.00	8.09	8.00	3.20	3.00
1.06	.36	.33	.31	2.06	2.00	6.38	1.86	.94	9.18	9.00	8.24	8.00	4.09	4.00
1.09	.17	.54	.36	2.16	2.00	6.16	2.77	.89	9.82	9.00	8.93	8.00	3.97	4.00
1.30	.54	1.09	1.07	4.00	4.10	4.36	2.71	.69	7.76	7.00	7.07	6.00	3.39*	3.00
.99	.60	.29	.19	2.07	2.00	5.04	2.74	1.43	9.21	9.00	7.78	8.00	2.95	3.00
1.05	.30	.79	.28	2.42	2.46	6.03	1.88	.94	8.85	8.00	7.91	8.00	4.03	4.00
2.64	.70	.47	.25	4.06	4.11	6.48	2.24	1.10	9.82	9.00	8.72	8.00	4.23	4.00
1.00	.51	.27	.26	2.04	2.00	5.40	2.48	1.76	9.64	9.00	7.88	8.00	3.12	3.00
1.06	.62	.31	.23	2.22	2.00	5.58	2.81	1.48	9.87	9.00	8.39	8.00	3.27	3.00
.07	.08	.33	.81	1.29	1.10	—	—	—	.79	.80	—	—	2.33	1.80
.30	1.61	.83	.79	3.53	3.50	3.22	9.08	6.63	18.93	17.00	12.30	14.00	3.47	4.00
3.23	—	—	—	3.23	3.25	3.09	—	—	3.09	3.66	3.09	3.66	3.64*	3.30
2.97	.34	1.02	1.02	5.35	5.00	3.06	5.33	5.13	13.52	—	8.39	7.00	3.62*	3.00
.16	.04	.60	.28	1.08	.80	6.51	4.38	1.20	12.09	11.00	10.89	10.00	2.19	2.00
2.23	—	.97	.65	3.85	4.10	6.12	2.78	1.51	10.41	9.00	8.90	8.00	4.07*	4.00
1.07	.44	1.34	.69	3.54	3.30	5.49	4.18	1.48	11.15	9.00	9.67	8.00	3.90*	3.00
.44	.16	.64	.54	1.78	1.60	6.19	4.47	1.66	12.32	10.00	10.66	9.00	1.94	2.00

* No.	580	Chlorine .64% equivalent to .85% potash, 2.54% potash as sulfate.
"	782	Potash figured as sulfate, as only traces of chlorides were present.
"	394-395	Chlorine 1.86% equivalent to 2.46% potash, 1.16% potash as sulfate.
"	194-440+	" 2.63% " " 3.49% " .58% " " "
"	433-994+	" 2.39% " " 3.17% " .73% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
International Agric. Corporation (Concluded).				
Buffalo One-Eight-Two	Springfield	$16.54	992	8.51
Buffalo Onion and Fruit Formula	Taunton	22.52	439	11.28
" " " " "	N. Hadley		697	
Buffalo Three-Eight-Four	N. Amherst	22.90	197	9.38
" " " "	Easthampton		362	
" " " "	Taunton		441	
" " " "	Somerset		568	
" " " "	Southbridge		932	
Buffalo Tobacco Producer	N. Amherst	27.65	193	6.10
" " "	N. Hadley		699	
" " "	Hadley		1132	
Buffalo Top Dresser	N. Amherst	27.30	198	10.70
" " "	N. Amherst		200	
" " "	Easthampton		361	
" " "	Taunton		436	
" " "	N. Hadley		698	
Buffalo Vegetable and Potato	N. Amherst	20.05	199	9.22
" " " "	Springfield		974	
Lister's Agric. Chemical Works, Newark, N. J.				
Lister's Five-Nine-Four Potato Fert	Granby	28.22	1184	9.12
Lister's Celebrated Onion Grower	Hatfield	26.95	384	11.62
" " " "	Agawam		1058	
Lister's Revised Celebrated Corn Manure	Hatfield	27.02	383	8.96
Lister's Revised Potato Fertilizer	S. Deerfield	16.22	427	8.38
" " " "	Fall River		519	
" " " "	Natick		708	
" " " "	Amherst		850	
" " " "	Webster		944	
Lister's High Grade Special for Spring Crops	S. Hadley	18.88	1185	6.33
Lister's Revised Potato Manure	S. Deerfield	26.85	428	9.23
" " " "	Agawam		1057	
Lister's Special Tobacco Fertilizer	Hadley	21.56	1135	8.31
Lister's Standard Grass Fertilizer	Webster	18.92	953	10.34
Lister's Success Fertilizer	Natick	15.52	714	8.49
" " "	Webster		947	
Lowell Fertilizer Co., Boston, Mass.				
Lowell Animal Brand	Sunderland	19.57	216	6.80
" " "	Raynham		411	
" " "	Boston		587	
" " "	Millis		607	
" " "	Norwood		685	
" " "	Milford		881	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.27	.06	.63	.31	1.27	.80	4.27	4.92	1.17	10.36	9.00	9.19	8.00	2.69	2.00
1.30	.26	.57	.36	2.49	2.40	7.33	3.72	1.22	12.27	11.00	11.05	10.00	3.03	3.00
1.25	.14	.65	.49	2.53	2.40	5.65	3.95	1.40	11.00	9.00	9.60	8.00	3.79	4.00
1.97	.08	1.35	1.13	4.53	4.50	2.55	4.55	1.17	8.27	6.00	7.10	5.00	3.26*	3.00
3.31	.06	1.06	.83	5.26	5.80	4.40	2.77	1.35	8.52	7.00	7.17	6.00	2.33	2.00
.97	—	.72	.56	2.25	2.40	5.23	4.06	1.45	10.74	9.00	9.29	8.00	2.71*	3.00
2.54	.45	.53	.47	3.99	4.11	6.83	3.14	1.33	11.30	10.00	9.97	9.00	4.06	4.00
2.62	.21	.24	.24	3.31	3.29	9.35	1.62	.84	11.81	11.00	10.97	10.00	4.02*	4.00
1.97	.47	.48	.42	3.34	3.29	8.78	1.40	.97	11.15	11.00	10.18	10.00	4.42	4.00
.51	.43	.40	.31	1.65	1.65	4.57	4.29	1.22	10.08	9.00	8.86	8.00	1.89	2.00
.13	.49	.65	.46	1.73	1.65	8.01	2.80	1.05	11.86	11.00	10.81	10.00	2.13	3.00
2.15	.37	.45	.43	3.40	3.29	8.33	2.08	1.17	11.58	10.00	10.41	10.00	4.15	4.00
.24	.76	.73	.47	2.20	2.06	5.80	3.00	1.10	9.90	9.00	8.80	8.00	3.41*	3.00
1.19	.53	.42	.26	2.40	2.20	5.01	4.32	1.28	10.61	10.00	9.33	9.00	1.89	2.00
.63	.26	.25	.21	1.35	1.23	4.95	4.37	.99	10.31	10.00	9.32	9.00	2.04	2.00
1.20	.16	.49	.49	2.34	2.46	5.93	2.51	1.15	9.59	9.00	8.44	8.00	2.75	3.00

* No.	193-699-1132	Chlorine .32%	equivalent to	.42% potash,	2.84% potash	as sulfate.
"	199-974	" 1.79%	" "	2.38% "	.33% "	" "
"	384-1058	" .45%	" "	.59% "	3.43% "	" "
"	1135	" 1.08%	" "	1.44% "	1.97% "	" "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Lowell Fertilizer Co. (Concluded).				
Lowell Bone Fert. for Corn, Grain and Veg.	S. Deerfield	$17.48	426	6.32
" " " " " " " "	Millis		617	
" " " " " " " "	Concord		819	
" " " " " " " "	Milford		885	
" " " " " " " "	N. Wilbraham		1031	
" " " " " " " "	W. Berlin		1111	
Lowell Corn and Vegetable	Northboro	24.79	1074	7.40
Lowell Dissolved Bone and Potash	Hatfield	16.65	66	7.17
Lowell Empress Brand	S. Deerfield	13.67	425	5.09
" " "	Beverly		775	
" " "	Milford		880	
" " "	Spencer		1018	
" " "	E. L'meadow		1103	
Lowell Lawn Dressing	Concord	25.10	661	4.17
Lowell Market Garden Manure	Springfield	26.74	1053	7.64
Lowell Potato Grower	S. Lowell	24.94	758	7.14
" " "	Concord		815	
" " "	Northboro		1078	
Lowell Potato Manure	Raynham	18.31	416	4.42
" " "	Millis		621	
" " "	Norwood		680	
" " "	N .Wilbraham		1037	
" " "	Springfield		1054	
" " "	W. Berlin		1109	
Lowell Potato Phosphate	Raynham	21.87	415	6.74
" " "	N. Wilbraham		1032	
" " "	Springfield		1051	
" " "	W. Berlin		1106	
Lowell Grass Mixture for Top Dressing and Lawns	Concord	28.01	663	6.93
" " " " " " " "	Norwood		684	
" " " " " " " "	Attleboro		837	
Lowell Special Tobacco from Veg. & Animal Mat.	Sunderland	30.23	296	8.70
Lowell Sterling Phosphate	S. Lowell	14.78	750	5.03
" " "	Southbridge		935	
" " "	Springfield		1052	
Lowell Superior Fertilizer	Raynham	25.41	414	5.44
" " "	Concord		664	
" " "	Concord		820	
" " "	Attleboro		833	
J. E. McGovern, Andover, Mass.				
Andover Animal Fertilizer	S. Lawrence	27.20	636	7.76
Mapes' Formula & Peruvian Guano Co., New York City.				
Mapes' Average Soil Complete Manure	Seekonk	31.27	553	11.03
" " " " "	Springfield		968	
Mapes' Cauliflower and Cabbage Manure	Boston	28.88	533	11.34
" " " " "	Fitchburg		857	
" " " " "	Worcester		984	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.67	.64	.26	.12	1.69	1.50	5.97	2.01	1.05	9.03	9.00	7.98	8.00	2.89	3.00
1.27	.95	.82	.26	3.30	3.28	6.35	2.25	.79	9.39	9.00	8.60	8.00	3.70	4.00
.81	.21	.42	.29	1.73	1.64	6.61	2.22	.69	9.52	10.00	8.83	9.00	2.07	2.00
.48	.32	.24	.21	1.25	1.24	5.04	2.13	.64	7.81	8.00	7.17	7.00	2.07	2.00
3.81	—	.07	.06	3.94	4.10	6.99	1.38	.15	8.52	9.00	8.37	8.00	3.86	4.00
2.82	.31	.58	.29	4.00	4.10	6.76	1.71	.59	9.06	9.00	8.47	8.00	4.09	4.00
1.23	.78	.93	.29	3.23	3.29	6.10	2.01	.97	9.08	9.00	8.11	8.00	4.03	4.00
.77	.26	.34	.30	1.67	1.64	5.23	1.99	.94	8.16	8.00	7.22	7.00	3.90	4.00
1.16	.28	.76	.26	2.46	2.46	6.31	1.80	.54	8.65	9.00	8.11	8.00	4.07	4.00
2.56	.60	.77	.30	4.23	4.10	6.48	1.86	.82	9.16	9.00	8.34	8.00	4.22	4.00
1.45	.45	1.81	.59	4.30	4.10	5.61	1.81	.41	7.83	8.00	7.42	7.00	4.87*	4.00
.11	.43	.22	.13	.89	.82	5.71	2.02	1.10	8.83	9.00	7.73	8.00	2.98	3.00
2.28	.37	.66	.26	3.57	3.69	6.35	1.87	.89	9.11	9.00	8.22	8.00	4.07	4.00
.45	.77	1.94	.94	4.10	3.00	.23	7.76	1.22	9.21	6.00	7.99	5.00	3.43	3.00
3.55	.19	.40	.36	4.50	4.50	.73	7.34	.66	8.73	8.00	8.07	7.00	5.89*	5.00
3.73	.13	.30	.35	4.51	4.12	.47	6.35	.48	7.30	6.00	6.82	6.00	5.71	6.00

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* No. 296 Chlorine .45% equivalent to .60% potash, 4.27% potash as sulfate.
" 553-968 " .63% " " .84% " 5.05% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Mapes' Formula & Peruvian Guano Co. (Concluded).				
Mapes' Cereal Brand	Conway	$19.66	1145	6.37
" " "	Pittsfield		1152	
Mapes' Complete Manure for General Use	Lawrence	26.14	604	7.51
Mapes' Complete Manure with 10% Potash	Fall River	30.45	337	11.60
" " " " " "	Taunton		398	
Mapes' Corn Manure	Boston	28.84	573	11.34
" " "	Fitchburg		865	
" " "	Springfield		969	
Mapes' Corn Manure	Lawrence	30.12	650	9.61
Mapes' Economical Potato Manure	Fall River	33.67	327	8.66
" " " "	Seekonk		552	
" " " "	Fitchburg		859	
" " " "	Conway		1146	
Mapes' Economical Potato Manure	Hingham	30.21	1258	12.40
Mapes' Fruit and Vine Manure	Lawrence	31.49	602	4.20
Mapes' Grass and Grain Spring Top Dressing	Taunton	32.67	392	10.68
" " " " " " "	Lawrence		641	
Mapes' Lawn Top Dressing	Taunton	16.36	389	10.37
Mapes' Potato Manure	Taunton	33.43	421	10.27
" " "	Taunton		434	
" " "	Seekonk		521	
" " "	Fitchburg		866	
" " "	Springfield		967	
" " "	Worcester		982	
Mapes' Potato Manure	Lawrence	34.00	642	9.10
Mapes' Tobacco Ash Constituents	Feeding Hills	35.29	174	4.03
" " " "	Westfield		897	
Mapes' Tobacco Manure, Wrapper Brand	Westfield	44.03	900	8.61
Mapes' Tobacco Starter, Improved	Westfield	25.24	898	9.11
" " " "	Conway		1147	
Mapes' Top Dresser Improved, Full Strength	Boston	44.37	534	6.10
Mapes' Top Dresser Improved, Half Strength	Seekonk	22.32	520	9.44
Mapes' Vegetable or Complete Manure for Light Soils	Taunton	34.39	393	11.89
" " " " " " "	Boston		532	
" " " " " " "	Springfield		970	
" " " " " " "	Worcester		983	
The Mitchell Fertilizer Co., Tremley, N. J.				
Mitchell Special Fertilizer	Seekonk	28.63	556	9.07
Mitchell Special Vegetable Fertilizer	N. Swansea	26.28	567	8.32
National Fertilizer Co., 92 State St., Boston, Mass.				
National Ammoniated Bone Phosphate	Leominster	16.23	854	9.50
National Comp. Root and Grain Fert.	Sunderland	24.77	182	10.42
" " " " " "	N. Hadley		237	
" " " " " "	Sunderland		254	
" " " " " "	Sunderland		258	

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* No. 898-1147 Chlorine .38% equivalent to .51% potash, 1.56% potash as sulfate.
" 534 " .64% " " .85% " 3.36% " " "
" 520 " .36% " " .48% " 1.69% " " "
" 393-532-970 " .63% " " .83% " 5.62% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.			
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.13	.16	.37	.40	2.06	1.65	.26	7.30	2.19	9.75	8.00	7.56	6.00	3.76*	3.00
2.75	—	.38	.37	3.50	3.29	.51	8.81	2.09	11.41	10.00	9.32	8.00	4.48	4.00
1.98	—	.14	.26	2.38	2.06	.13	4.79	.64	5.56	5.00	4.92	3.00	11.34	10.00
1.61	.20	.45	.37	2.63	2.47	.26	9.35	2.02	11.63	10.00	9.61	8.00	7.19*	6.00
1.91	.07	.38	.48	2.84	2.47	.45	7.05	3.95	11.45	10.00	7.50	8.00	8.10*	6.00
2.97	.06	.25	.33	3.61	3.29	.26	5.92	.92	7.17	6.00	6.18	4.00	9.34*	8.00
2.62	.34	.23	.30	3.49	3.29	.19	3.81	3.50	7.50	6.00	4.00	4.00	7.93*	8.00
1.09	—	.34	.34	1.77	1.65	.45	6.49	.87	7.81	7.00	6.94	5.00	10.81*	10.00
4.24	.04	.34	.33	4.95	4.94	.41	6.07	.69	7.17	6.00	6.48	5.00	7.29	7.00
2.47	.07	.11	.17	2.82	2.47	.32	3.02	.92	4.26	3.50	3.34	2.00	2.87	2.50
2.96	.31	.41	.41	4.09	3.71	.64	7.09	2.14	9.87	8.00	7.73	8.00	7.40*	6.00
2.94	.27	.32	.50	4.03	.71	.93	6.73	1.91	9.57	8.00	7.66	8.00	7.85*	6.00
.08	.12	.19	.14	.53	3.50	.22	4.04	2.76	7.02	5.70	4.26	—	51.51*	15.00
3.54	.47	1.15	.84	6.00	6.18	.09	5.58	.66	6.33	4.50	5.67	—	9.52*	10.50
2.23	.20	1.26	.89	4.58	4.12	.19	7.46	1.05	8.70	8.00	7.65	6.00	2.07*	1.00
9.40	.35	.33	.14	10.22	9.88	.32	6.72	.66	7.70	8.00	7.04	5.00	4.21*	4.00
4.64	.07	.15	.11	4.97	4.94	.47	3.41	.87	4.75	4.00	3.88	2.50	2.17*	2.00
3.49	.05	.76	.64	4.94	4.94	.32	7.95	1.22	9.49	8.00	8.27	6.00	6.45*	6.00
2.91	.40	.43	.33	4.07	4.11	7.72	2.59	.94	11.25	11.00	10.31	10.00	4.19	4.00
2.29	.32	.47	.21	3.29	3.29	7.68	2.75	1.20	11.63	11.00	10.43	10.00	4.15	4.00
.85	.26	.38	.27	1.76	1.65	3.57	4.75	1.53	9.85	9.00	8.32	8.00	2.01	2.00
1.58	.43	.86	.35	3.22	3.29	4.56	3.94	1.48	9.98	9.00	8.50	8.00	4.00	4.00

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* No. 1145-1152 Chlorine 2.69% equivalent to 3.57% potash, .19% potash as sulfate.
" 573-865-969 " 4.17% " " 5.55% " 1.64% " " "
" 650 " 5.32% " " 7.07% " 1.03% " " "
" 327-552-859 + " .64% " " .85% " 8.49% " " "
" 1258 " .96% " " 1.28% " 6.63% " " "
" 602 " .58% " " .76% " 10.05% " " "
" 421-434-521 + " .50% " " .67% " 6.73% " " "
" 642 " .33% " " .44% " 7.41% " " "
" 174-897 " .91% " " 1.22% " 14.29% " " "
" 900 " .89% " " 1.17% " 2.40% " " " 5.95% potash as carbonate.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
National Fertilizer Co. (Concluded).				
National Comp. Root and Grain Fert.	Sunderland	$24.51	266	11.15
" " " " " "	Hadley		317	
" " " " " "	N. Westport		478	
" " " " " "	W. Springfield		483	
" " " " " "	Bridgewater		712	
National Market Garden Fert.	Sunderland	21.79	257	8.70
National Special Complete Fertilizer	Sunderland	25.50	112	7.71
" " " "	N. Hadley		144	
" " " "	N. Hadley		158	
" " " "	Sunderland		178	
" " " "	Bradstreet		206	
" " " "	Bradstreet		209	
" " " "	Bradstreet		213	
" " " "	N. Hadley		235	
" " " "	Bradstreet		279	
" " " "	Bradstreet		507	
National Complete Grass Fert. Special	N. Hadley	27.35	157	10.44
" " " " "	Sunderland		214	
" " " " "	Bradstreet		509	
" " " " "	Sturbridge		942	
" " " " "	Northboro		1075	
National Special Eureka Potato Fert.	Northboro	22.72	1076	10.75
National Fish and Potash	Bradstreet	23.12	202	11.00
" " " "	Hadley		318	
" " " "	W. Springfield		486	
" " " "	Framingham		719	
" " " "	N. Hadley		781	
" " " "	Sturbridge		921	
National High Grade Top Dressing Special	Bradstreet	31.63	272	11.15
National High Grade Top Dressing Special	Bradstreet	32.05	510	12.04
National Special Potato Phosphate	N. Westport	19.67	468	10.66
" " " "	Framingham		715	
National XXX Fish and Potash	Sunderland	21.07	180	9.38
" " " " "	W. Springfield		485	
" " " " "	Sturbridge		943	
National Tobacco Special Revised	Bradstreet	29.58	211	7.98
National Tobacco Special Revised	N. Hadley	27.81	146	7.87
" " " "	Sunderland		215	
" " " "	Sunderland		246	
" " " "	Sunderland		256	
" " " "	Bradstreet		271	
" " " "	Hadley		319	
National Tobacco Special	Hatfield	26.78	1140	5.60
" " "	N. Hadley		1224	
Natural Guano Co., Aurora, Ill.				
Sheep's Head Brand Pulv. Sheep Manure	Amherst	11.92	286	7.76
" " " " " "	Holyoke		496	
" " " " " "	Brockton		657	
" " " " " "	Norwood		674	
" " " " " "	Fitchburg		864	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Total		Water Soluble.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.		
1.82	.34	.69	.44	3.29	3.29	4.66	3.66	1.35	9.67	9.00	8.32	8.00	3.90	4.00
1.08	.37	.76	.39	2.60	2.88	3.80	4.60	1.96	10.36	9.00	8.60	8.00	3.37	4.00
1.93	.25	.82	.30	3.30	3.29	5.29	3.28	1.56	10.13	9.00	8.57	8.00	4.00*	4.00
3.05	.21	.54	.31	4.11	4.11	4.82	4.60	.89	10.31	10.00	9.42	9.00	3.96	4.00
1.74	.40	.41	.26	2.81	2.88	4.59	3.88	1.79	10.26	9.00	8.47	8.00	3.72	4.00
1.77	.27	.51	.30	2.85	2.88	4.97	3.50	1.38	9.85	9.00	8.47	8.00	3.96	4.00
5.21	.23	.69	.27	6.40	8.23	4.72	3.24	.48	8.44	7.00	7.96	6.00	3.08	4.00
5.20	.32	.75	.39	6.66	8.23	3.61	2.72	.69	7.02	7.00	6.33	6.00	3.43	4.00
.92	.44	.45	.33	2.14	2.06	3.83	4.97	1.51	10.31	9.00	8.80	8.00	3.02	3.00
1.56	.36	.35	.24	2.51	2.47	4.69	4.09	1.48	10.26	9.00	8.78	8.00	3.28	3.00
.92	.16	2.32	1.35	4.75	4.53	1.34	6.95	.54	8.83	4.00	8.29	3.00	3.26*	3.00
1.00	.16	1.97	1.58	4.71	4.53	1.12	3.90	.82	5.84	4.00	5.02	3.00	3.59*	3.00
.86	.20	2.03	1.37	4.46	4.53	.93	3.64	.46	5.03	4.00	4.57	3.00	3.71*	3.00
.29	—	.55	1.27	2.11	2.25	—	1.43	.15	1.58	1.25	1.43	1.00	1.60	1.50

* No. 112-144-158+ Chlorine .96% equivalent to 1.28% potash, 2.72% potash as sulfate.
“ 211 “ .32% “ “ .43% “ 2.83% “ “ “
“ 146-215-246+ “ .25% “ “ .33% “ 3.26% “ “ “
“ 1140-1224 “ .32% “ “ .42% “ 3.29% “ “ “

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
New England Fertilizer Co., 40A N. Market St., Boston.				
New England Complete Manure	Brockton	$24.81	638	7.54
" " " "	S. Lowell		1069	
New England Corn and Grain Fertilizer	Cummington	12.85	1198	4.99
New England Corn Manure	Topsfield	25.41	1211	11.04
New England Corn Phosphate	Brockton	16.93	639	5.57
" " " "	Amherst		848	
New England High Grade Potato Fertilizer	Brockton	20.87	637	7.80
New England Improved Tobacco Grower	Amherst	26.00	847	7.15
New England Market Garden Manure	Brockton	26.48	640	8.02
New England Potato Fertilizer	Brockton	18.18	655	5.64
New England Superphosphate for all Crops	Sunderland	20.37	295	7.89
" " " " " "	S. Lowell		755	
" " " " " "	S. Amherst		1186	
Nitrate Agencies Co., New York City.				
Genuine Peruvian Guano	Seekonk	52.08	514	20.28
Olds and Whipple, Hartford, Conn.				
O. & W. Corn and Potato Fertilizer	N. Hadley	26.11	122	7.21
" " " " "	Hatfield		385	
O. & W. Grass Fertilizer	Sunderland	23.70	264	7.84
O. & W. Onion Fertilizer	N. Hadley	23.59	155	9.02
" " "	N. Hadley		231	
O. & W. Complete Tobacco Fertilizer	N. Hadley	28.59	123	6.47
" " " "	N. Hadley		136	
" " " "	N. Hadley		151	
" " " "	N. Hadley		156	
" " " "	N. Hadley		227	
" " " "	N. Hadley		229	
O. & W. Special Onion Fertilizer	N. Hadley	24.91	219	8.24
" " " "	Sunderland		262	
Parmenter and Polsey Fertilizer Co., Boston, Mass.				
P. & P. Aroostook Special	Belchertown	25.06	1195	7.82
P. & P. Complete Grass	S. Lowell	35.69	771	9.38
" " "	Auburn		1097	
P. & P. Corn and Grain Fertilizer	S. Lowell	14.60	1068	6.57
P. & P. Maine Potato Fertilizer	S. Lowell	25.44	1013	8.28
P. & P. Plymouth Rock Brand	S. Lowell	20.61	761	8.02
P. & P. Potato Fertilizer	Millis	17.23	620	8.92
P. & P. Special Onion Grower	Montague	23.12	1207	5.94
P. & P. Special Potato Fertilizer	S. Lowell	24.56	759	7.17
P. & P. Special Tobacco Grower	Montague	25.83	1206	7.48
R. T. Prentiss, Holyoke, Mass.				
Complete for Potatoes and Vegetables	Holyoke	23.20	495	10.90
" " " " "	Easthampton		577	
Complete for Top Dressing	Holyoke	28.33	497	8.38
" " " "	Easthampton		578	
The Pulverized Manure Co., Chicago, Ill.				
Wizard Brand Cattle Manure	Taunton	10.99	408	8.34
" " " "	Brockton		656	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.53	.63	.74	.40	3.30	3.28	6.00	1.96	.79	8.75	9.00	7.96	8.00	4.14	4.00
.46	.31	.28	.19	1.24	1.23	4.05	2.30	.64	6.99	8.00	6.35	7.00	2.00	2.00
1.24	1.04	.64	.36	3.28	3.28	5.61	2.68	.84	9.13	8.00	8.29	8.00	4.14*	4.00
.93	.32	.24	.15	1.64	1.64	5.61	2.17	1.10	8.88	9.00	7.78	8.00	2.88	3.00
1.16	.19	.63	.24	2.22	2.46	5.78	2.16	.94	8.88	9.00	7.94	8.00	4.03	4.00
1.28	.65	1.22	.84	3.99	4.10	4.08	2.96	.69	7.73	7.00	7.04	6.00	3.38*	3.00
2.05	.41	1.00	.46	3.92	4.10	5.91	1.82	.82	8.55	9.00	7.73	8.00	4.05	4.00
.68	.18	.44	.31	1.61	1.64	4.72	2.43	.94	8.09	8.00	7.15	7.00	3.97	4.00
1.18	.61	.40	.22	2.41	2.46	6.48	2.12	1.12	9.72	9.00	8.60	8.00	2.97	3.00
3.54	1.94	2.24	3.19	10.91	10.59	2.49	9.09	.69	12.27	11.00	11.58	10.00	2.63	2.00
1.91	.53	.85	.42	3.71	3.30	.64	5.58	2.22	8.44	6.00	6.22	6.00	4.84	3.00
2.72	.34	.42	.28	3.76	3.30	.23	6.70	1.28	8.21	6.00	6.93	6.00	3.35*	3.00
1.84	.34	.81	.41	3.40	3.30	.13	6.68	2.35	9.16	7.00	6.81	6.00	3.56*	3.00
1.01	1.20	1.45	1.25	4.91	4.50	.38	3.45	.94	4.77	3.00	3.83	3.00	3.70*	3.00
1.32	.05	1.12	.36	2.85	2.45	3.10	6.16	2.45	11.71	8.00	9.26	8.00	3.88*	3.00
2.08	.68	.51	.23	3.50	3.69	5.93	2.08	.77	8.78	9.00	8.01	8.00	3.94	4.00
3.06	1.36	1.52	.67	6.61	6.50	4.37	2.73	.94	8.04	8.00	7.10	7.00	4.25	4.00
.20	.30	.22	.16	.88	.82	5.17	2.25	1.02	8.44	9.00	7.42	8.00	3.11	3.00
1.18	.95	.66	.39	3.18	3.28	5.29	3.10	1.05	9.44	9.00	8.39	8.00	4.40	4.00
1.20	.54	.41	.27	2.42	2.46	6.51	2.09	1.12	9.72	9.00	8.60	8.00	3.09	3.00
.86	.36	.24	.15	1.61	1.64	6.12	1.92	1.22	9.26	9.00	8.04	8.00	2.93	3.00
2.33	.22	.87	.26	3.68	4.10	5.01	1.53	.20	6.74	7.00	6.54	6.00	3.00*	3.00
1.82	.70	.45	.28	3.25	3.28	6.29	1.90	1.02	9.21	9.00	8.19	8.00	4.06	4.00
1.14	.77	1.15	.94	4.00	4.10	3.89	3.38	1.05	8.32	7.00	7.27	6.00	3.00*	3.00
2.17	.22	.24	.50	3.13	3.30	7.08	1.95	1.17	10.20	9.00	9.03	8.00	3.26	3.00
2.72	.74	.68	.66	4.80	4.94	5.14	2.48	1.56	9.18	7.00	7.62	6.00	3.41	3.00
.24	.14	.44	1.18	2.00	1.80	.45	.45	.18	1.08	1.00	.90	1.00	1.48	1.00

*No. 1211 Chlorine 2.40% equivalent to 3.19% potash, .95% potash as sulfate.
" 847 " .66% " " .88% " 2.50% " " "
" 264 " .58% " " .77% " 2.58% " " "
" 155-231 " 1.27% " " 1.69% " 1.87% " " "
" 123-136+ " .45% " " .60% " 3.10% " " "
" 219-262 " .50% " " .66% " 3.22% " " "
" 1207 " .36% " " .48% " 2.52% " " "
" 1206 " .26% " " .35% " 2.65% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Pulverized Manure Co. (Concluded).				
Wizard Brand Pulverized Sheep Manure	Fall River	$11.48	329	9.42
" " " " "	Taunton		409	
" " " " "	Holyoke		499	
Reading Bone Fertilizer Co., Reading, Penn.				
Gilt Edge Potato and Tobacco Grower	Cheshire	20.82	1154	10.11
" " " " " "	Buckland		1202	
Prize Winner	W. Brookfield	23.10	1025	7.32
Special Grain and Grass Producer	Buckland	15.19	1204	5.91
Special Potato and Tobacco Manure	Cheshire	15.53	1158	5.62
" " " " "	Buckland		1203	
Truck, Fruit, Vine, Potato and Tobacco Grower	W. Brookfield	23.72	1029	8.00
" " " " " " "	Buckland		1205	
Rogers Manufacturing Co., Rockfall, Conn.				
Complete Potato and Vegetable Fert.	Sunderland	20.62	292	7.09
" " " " "	N. Westport		469	
High Grade Comp. Corn and Onion Manure	N. Amherst	25.57	853	6.10
" " " " " " "	Ludlow		1030	
High Grade Grass and Grain Fertilizer	Greenfield	30.58	871	7.68
High Grade Oats and Top Dressing	Sunderland	33.08	217	6.43
" " " " " "	Sunderland		293	
" " " " " "	Deerfield		453	
" " " " " "	Deerfield		456	
" " " " " "	E. Whately		493	
" " " " " "	Greenfield		876	
" " " " " "	Ludlow		1039	
High Grade Soluble Tobacco Manure	S. Deerfield	32.06	1171	6.23
High Grade Sol. Tobacco and Pot. Manure	Bradstreet	27.97	204	7.30
" " " " " " "	Sunderland		218	
" " " " " " "	Deerfield		452	
" " " " " " "	Deerfield		455	
" " " " " " "	N. Amherst		844	
" " " " " " "	W. Hatfield		1138	
High Grade Tobacco Grower	Sunderland	29.45	190	6.08
" " " "	N. Amherst		852	
High Grade Tobacco Grower, Vegetable Carbonate	Deerfield	28.88	454	7.29
Rogers and Hubbard Co., Middletown, Conn.				
Hubbard's Bone Base All Soil & All Crop Phos.	Hadley	21.66	726	9.98
" " " " " " " " "	E. Milton		753	
" " " " " " " " "	Charlton		923	
" " " " " " " " "	Agawam		1048	
Hubbard's Bone Base Complete Phosphate	E. Taunton	13.30	405	5.53
" " " " "	N. Westport		461	
" " " " "	Hadley		725	
" " " " "	E. Milton		763	
" " " " "	Littleton		1087	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.36	.11	.52	1.00	1.99	1.80	—	—	—	1.25	1.00	—	—	1.73	1.00
1.32	.08	.12	.12	1.64	1.64	8.39	3.71	1.12	13.22	13.00	12.10	12.00	3.38	4.00
1.44	.31	.38	.30	2.43	2.46	6.48	3.88	1.17	11.53	10.00	10.36	9.00	3.83	4.00
.34	.30	.23	.14	1.01	.82	4.44	3.22	.94	8.60	8.00	7.66	7.00	3.18	3.00
.54	.10	.17	.13	.94	.82	3.93	2.85	.87	7.65	7.00	6.78	6.00	4.03	4.00
2.16	.28	.47	.20	3.11	3.29	5.23	3.57	1.30	10.10	9.00	8.80	8.00	3.78	4.00
.53	.23	1.21	.49	2.46	2.25	1.76	5.76	3.27	10.79	10.00	7.52	8.00	2.91	2.50
.83	.68	1.82	.78	4.11	3.60	.80	4.02	3.01	7.83	8.00	4.82	6.00	3.51	3.00
.10	.11	1.94	.66	2.81	2.75	—	10.61	8.32	18.93	18.00	10.61	—	5.42	4.00
4.65	.31	.96	.42	6.34	6.30	1.25	7.20	1.58	10.03	9.00	8.45	7.00	3.55	3.00
1.43	.52	2.03	.77	4.75	5.00	.57	7.24	1.94	9.75	7.00	7.81	5.00	4.71*	4.00
1.10	.52	1.33	.65	3.60	3.50	.19	7.16	2.73	10.08	9.00	7.35	7.00	4.96*	4.00
1.08	.33	2.22	1.53	5.16	5.00	.48	3.93	.59	5.00	4.00	4.41	3.00	3.91*	3.00
.88	.62	2.14	1.39	5.03	5.00	.83	4.06	.54	5.43	4.00	4.89	3.00	3.29*	3.00
2.47	.07	.35	.27	3.16	3.30	2.27	6.35	1.05	9.67	9.00	8.62	8.00	2.76	2.50
.44	.44	.34	.22	1.44	1.50	.70	5.52	2.30	8.52	8.00	6.22	7.00	1.67	1.66

* No. 1171 Chlorine .40% equivalent to .53% potash, 4.18% potash as sulfate.
" 204-218+ " 1.92% " " 2.55% " 2.41% " " "
" 190-852 " .32% " " .42% " 3.49% " " "
" 454 " .41% " " .54% " 1.18% " " " 1.57% potash as carbonate.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
The Rogers and Hubbard Co. (Concluded).				
Hubbard's Bone Base Oats and Top Dressing	N. Westport	$36.94	466	3.21
" " " " " " "	Hatfield		696	
" " " " " " "	Hadley		723	
" " " " " " "	E. Milton		764	
Hubbard's Bone Base Seeding Down & Fruit	N. Westport	25.83	462	7.67
" " " " " "	Charlton		929	
" " " " " "	Ludlow		1050	
" " " " " "	Chelmsford		1065	
" " " " " "	Littleton		1085	
Hubbard's Bone Base Potato Phosphate	E. Taunton	17.91	444	6.22
" " " " "	N. Westport		471	
" " " " "	E. Milton		752	
" " " " "	Charlton		925	
" " " " "	Ludlow		1061	
Hubbard's Bone Base Corn & General Crop Man.	E. Taunton	19.12	446	8.69
" " " " " " "	N. Westport		464	
" " " " " " "	Hadley		724	
" " " " " " "	Charlton		924	
" " " " " " "	Ludlow		1059	
" " " " " " "	Chelmsford		1066	
" " " " " " "	Littleton		1086	
Hubbard's Bone Base Soluble Potato Manure	N. Westport	27.65	472	11.96
" " " " " "	Hadley		720	
" " " " " "	Charlton		930	
" " " " " "	Ludlow		1060	
Hubbard's Bone Base Soluble Tobacco Manure	N. Westport	33.28	463	8.44
" " " " " "	Hadley		722	
Hubbard's Bone Base Tobacco Special	Hadley	24.99	721	4.90
Ross Brothers Co., 83 Front St., Worcester, Mass.				
Corn, Grain and Grass Fertilizer	Charlton	25.04	918	9.00
" " " " "	Worcester		963	
High Grade Potato and Vegetable Fertilizer	Worcester	23.49	981	10.08
Spring Grass Top Dressing	Worcester	32.28	964	8.44
Worcester Special Lawn Dressing	Worcester	25.20	965	9.68
" " " "	Springfield		989	
F. S. Royster Guano Co., Baltimore, Md.				
Royster's Favorita Compound	Woburn	18.14	778	10.01
" " "	N. Adams		1155	
" " "	Westfield		1164	
" " "	Middleboro		1214	
Royster's Parfait Compound	Bernardston	27.91	1199	7.17
Royster's Tomahawk Compound	Westfield	21.50	1163	6.03
Royster's Tomahawk Compound	M'f'r. Sample	22.75	1267	5.93
Royster's Trucker's Delight	Woburn	24.56	777	9.15
" " "	Cheshire		1159	
" " "	Westfield		1162	
Royster's Utopia Compound	Lanesboro	20.17	1150	9.73

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
7.88	.13	.22	.09	8.32	8.50	—	5.97	2.55	8.52	8.00	5.97	4.50	3.78	4.00
.25	.80	.68	.47	2.20	2.20	—	11.33	6.12	17.45	16.00	11.33	6.50	4.29	4.00
.75	.40	.58	.27	2.00	2.00	1.37	6.95	2.96	11.28	10.00	8.32	9.00	2.21	2.25
1.54	.15	.44	.37	2.50	2.50	1.31	5.65	1.89	8.85	8.00	6.96	6.00	2.99	3.00
2.63	.53	1.01	.66	4.83	5.00	.23	9.55	.99	10.77	10.00	9.78	6.60	2.25*	2.00
2.00	2.04	.83	.83	5.70	5.00	.48	7.12	2.96	10.56	10.00	7.60	6.60	3.60*	3.33
.19	.20	2.31	1.33	4.03	4.12	.26	4.53	1.56	6.35	5.50	4.79	3.00	3.13*	3.00
1.35	.36	.59	.46	2.76	2.88	5.17	2.81	.92	8.90	8.50	7.98	8.00	5.38	3.00
.97	.69	.67	.53	2.86	2.88	6.03	2.59	1.25	9.87	8.50	8.62	8.00	3.69	4.00
.88	.53	2.45	1.66	5.52	5.75	3.32	2.65	1.12	7.09	6.50	5.97	6.00	4.14	4.00
2.33	.31	.49	.49	3.62	2.88	2.78	3.50	.94	7.22	8.50	6.28	8.00	4.86	4.00
1.04	.39	.20	.15	1.78	1.65	6.61	4.01	1.22	11.84	10.50	10.62	10.00	2.07	2.00
2.30	.48	.72	.67	4.17	4.11	4.31	3.95	1.51	9.77	8.50	8.26	8.00	4.03	4.00
2.03	.15	.87	.69	3.74	4.11	2.40	2.06	.36	4.82	4.50	4.46	4.00	2.77*	3.00
2.10	.18	1.05	.70	4.03	4.11	2.03	2.65	.47	5.15	4.50	4.68	4.00	3.87*	3.00
2.00	.01	.76	.45	3.22	3.29	3.29	4.82	2.04	10.15	8.50	8.11	8.00	4.06	4.00
1.26	.33	.44	.26	2.29	2.47	4.27	4.66	.48	9.41	8.50	8.93	8.00	3.30	3.00

* No. 472-720-930+ Chlorine .54% equivalent to .72% potash, 1.53% potash as sulfate.
" 463-722 " .64% " " .85% " 2.75% " " "
" 721 " .53% " " .71% " 2.42% " " "
" 1163 " .20% " " .26% " 2.51% " " "
" 1267 " .48% " " .64% " 3.23% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
J. W. Sanborn, Pittsfield, N. H.				
Sanborn's Grass and Grain	Warren	$26.71	1011	10.18
" " " "	Northboro		1073	
Sanborn's Hill and Drill Fertilizer	Northboro	19.86	1072	7.95
Sanborn's Fertilizer for Potatoes and Corn	Warren	25.17	1028	8.73
Sanderson Fertilizer and Chemical Co., New Haven, Conn				
Sanderson's Atlantic Coast Bone Fish and Potash	N. Amherst	17.79	188	11.10
" " " " " " "	E. Taunton		447	
" " " " " " "	Fall River		518	
" " " " " " "	Agawam		1047	
Sanderson's Complete Tobacco Grower Special	N. Hadley	27.34	120	8.16
" " " " "	N. Hadley		171	
" " " " "	N. Amherst		177	
" " " " "	Sunderland		187	
" " " " "	Sunderland		248	
" " " " "	Sunderland		260	
" " " " "	Agawam		1056	
Sanderson's Corn Superphosphate	Sheffield	16.35	1153	10.43
Sanderson's Formula A Special	Sunderland	24.96	186	9.60
" " " "	N. Amherst		192	
" " " "	Sunderland		297	
" " " "	E. Taunton		445	
" " " "	Somerset		566	
Sanderson's Formula B Special	Sunderland	27.22	259	6.40
" " " "	S. Deerfield		429	
" " " "	Agawam		1055	
Sanderson's Potato Manure	E. Taunton	19.20	448	12.39
" " "	Fall River		475	
Sanderson's Special with Potash	Sunderland	23.48	268	13.55
" " " "	E. Taunton		406	
" " " "	Fall River		474	
M. L. Shoemaker & Co., Ltd., Philadelphia, Pa.				
Swift-Sure Superphosphate	N. Hadley	30.94	153	7.53
" " "	Bradstreet		210	
" " "	N. Hadley		230	
" " "	N. Hadley		238	
" " "	Bradstreet		270	
" " "	Bradstreet		274	
A. M. Smith & Co., 31 Commercial St., Boston, Mass.				
Equity Brand Dry Ground Hen Manure	Melrose	34.00	1004	7.94
Springfield Rendering Co., Springfield, Mass.				
Springfield Animal Brand	Holyoke	20.88	498	5.52
" " "	Springfield		971	
Springfield High Grade Dress. for Grass & Forcing	Springfield	31.54	991	5.37
Springfield Special Potato and Vegetable	Springfield	25.00	990	5.33
" " " " "	E. Longm'dow		1104	
Wm. Thomson & Sons, Ltd., Clovensford, Scotland.				
Thomson's Improved Vine, Plant & Veg. Manure	Boston	35.25	585	3.36
" " " " " " "	Boston		571	
Thomson's Special Chrysanthemum Manure	Boston	33.46	596	2.52

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
4.00	.22	.15	.15	4.52	4.94	6.54	2.34	.51	9.39	9.00	8.88	8.00	3.33	3.00
1.78	.04	.30	.22	2.34	2.47	5.78	2.90	.61	9.29	9.00	8.68	6.00	3.00*	3.00
2.62	.26	.23	.23	3.34	3.29	6.74	2.19	.92	9.85	9.00	8.93	8.00	4.28	4.00
.32	.34	.61	.74	2.01	1.64	1.79	6.94	1.30	10.03	9.00	8.73	8.00	2.10	2.00
.33	.27	2.19	1.63	4.42	4.50	.96	4.10	.43	5.49	4.00	5.06	3.00	3.74*	3.00
.22	.55	.50	.56	1.83	1.64	.96	7.76	1.15	9.87	9.00	8.72	8.00	1.71	2.00
1.42	.72	.60	.59	3.33	3.30	2.72	5.06	2.25	10.03	9.00	7.78	8.00	4.01	4.00
1.82	.21	.75	.52	3.30	3.30	4.08	4.74	2.35	11.17	9.00	8.82	8.00	4.50*	4.00
.84	.37	.54	.48	2.23	2.00	2.08	6.57	1.12	9.77	9.00	8.65	8.00	2.76	3.00
2.18	.12	.32	.26	2.88	2.88	5.46	3.50	.43	9.39	9.00	8.96	8.00	4.29	4.00
.81	1.00	1.11	.41	3.33	3.29	9.35	.60	1.86	11.81	12.00	9.95	9.00	5.50*	4.50
1.22	.65	4.22	1.76	7.85	7.00	1.57	1.13	.26	2.96	—	2.70	2.00	1.65	1.00
1.30	.39	.42	.32	2.43	2.46	5.93	2.92	1.25	10.10	9.00	8.85	8.00	3.18	3.00
2.56	1.18	.56	.39	4.69	4.90	3.25	5.89	.71	9.85	7.00	9.14	6.00	4.72*	4.00
1.98	.57	.41	.32	3.28	3.28	4.46	4.42	1.35	10.23	9.00	8.88	8.00	4.07	4.00
1.79	.31	1.35	.58	4.03	3.25	5.29	3.33	4.72	13.34	11.50	8.62	8.50	7.60	2.50
4.74	.20	.64	.27	5.85	4.25	5.91	2.99	2.63	11.53	10.50	8.90	7.00	4.05*	1.50

* No. 1072 Chlorine .79% equivalent to 1.05% potash, 1.95% potash as sulfate.
" 120-171+ " .52% " " .70% " 3.04% " " "
" 259-429+ " .41% " " .54% " 3.96% " " "
" 153-210+ " .60% " " .80% " 4.70% " " "
" 991 " .76% " " 1.00% " 3.72% " " "
" 59[illegible] " 2.02% " " 2.69% " 1.36% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
20th Century Specialty Co., Boston, Mass.				
Scientific 12L Fertilizer No. 1	Boston	$ 4.15	1008	2.12
Virginia-Carolina Chem. Co., New York City.				
Indian Head Brand for Tobacco	S. Deerfield	26.19	1173	7.00
National Corn, Grain and Grass Top Dressing	Easthampton	23.64	579	9.02
Owl Brand Potato and Truck Fert.	Easthampton	20.01	1136	9.88
" " " " " "	Southwick		1177	
Tobacco and Onion Special	S. Deerfield	24.86	1172	7.10
" " " "	Southwick		1178	
XXX Fish and Potash	S. Deerfield	16.37	1174	10.52
Whitman and Pratt Rendering Co., Lowell, Mass.				
Whitman and Pratt's All Crop	Billerica	23.64	805	8.38
" " " " "	Springfield		1217	
Whitman and Pratt's Corn Success	Billerica	17.45	790	7.94
" " " " "	Springfield		1220	
Whitman and Pratt's Potato Manure	Billerica	20.53	745	7.01
" " " " "	Springfield		1222	
Whitman and Pratt's Special Top Dresser	Springfield	34.04	1219	10.48
Whitman and Pratt's Vegetable Grower	Springfield	25.57	1218	7.93
Wilcox Fertilizer Co., Mystic, Conn.				
Wilcox Complete Bone Superphosphate	Marblehead	18.65	625	12.05
Wilcox Corn Special	N. Swansea	23.09	560	11.08
Wilcox Fish and Potash	Amherst	20.98	285	16.40
" " " "	New Bedford		371	
" " " "	Fall River		375	
" " " "	Marblehead		610	
" " " "	Westfield		895	
Wilcox Grass Fertilizer	New Bedford	28.54	365	12.63
Wilcox High Grade Tobacco Special	Amherst	32.08	281	11.20
" " " " "	Sunderland		322	
" " " " "	Deerfield		457	
Wilcox Potato Fertilizer	Fall River	20.06	334	14.10
" " "	New Bedford		368	
" " "	Three Rivers		1126	
Wilcox Potato, Onion and Veg. Phosphate	N. Hadley	26.08	221	11.65
" " " " " "	Amherst		275	
" " " " " "	Fall River		338	
" " " " " "	New Bedford		370	
" " " " " "	Marblehead		624	
Wilcox Special Superphosphate	Three Rivers	15.29	1125	12.83
A. H. Wood & Co., Framingham, Mass.				
Wood's B. B. Fertilizer	Framingham	24.40	1071	9.63
Wood's 1915 Special Fertilizer	Framingham	26.10	1077	8.38
Worcester Rendering Co., Auburn, Mass.				
Royal Worcester Potato Fertilizer	Webster	35.18	952	4.98
Royal Worcester Corn and Grain Fert.	Auburn	25.39	945	5.31

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.79	—	.02	.01	.82	1.00	.80	1.14	.08	2.02	2.00	1.94	.65	.12	—
2.83	.35	.65	.58	4.41	4.12	2.93	1.59	.51	5.03	5.00	4.52	4.00	4.14*	4.00
2.05	.28	.32	.26	2.91	3.29	5.84	3.57	.82	10.23	9.00	9.41	8.00	3.70*	4.00
1.05	.26	.31	.26	1.88	1.65	5.78	2.92	.79	9.49	9.00	8.70	8.00	3.85*	4.00
2.02	.07	.78	.61	3.48	3.29	6.29	2.34	.38	9.01	9.00	8.63	8.00	3.40*	3.00
.46	.50	.30	.43	1.69	1.65	4.40	3.76	.87	9.03	9.00	8.16	8.00	2.22	2.00
.77	.85	.53	.41	2.56	2.46	5.46	3.40	1.40	10.26	11.00	8.86	9.00	4.20	4.00
.86	.41	.23	.17	1.67	1.64	5.27	2.74	.94	8.95	10.00	8.01	8.00	3.10	3.00
1.30	.19	.46	.38	2.33	2.45	4.50	2.55	.94	7.99	9.00	7.05	7.00	4.09	4.00
2.51	1.47	1.15	.54	5.67	5.74	6.00	2.68	1.96	10.64	9.00	8.68	8.00	4.14	4.00
2.05	.80	.38	.22	3.45	3.69	6.44	2.21	.99	9.64	10.00	8.65	8.00	4.12	4.00
1.79	—	.16	.14	2.09	2.05	6.12	3.65	.41	10.18	9.00	9.77	8.00	2.66	3.00
1.65	.11	.43	.42	2.61	2.46	6.73	2.53	.56	9.82	9.00	9.26	8.00	4.19	4.00
.62	.22	1.09	.69	2.62	2.40	4.15	2.53	.82	7.50	6.00	6.68	5.00	3.59	3.00
3.04	—	.86	.53	4.43	4.18	7.33	2.06	.18	9.57	9.00	9.39	8.00	3.98	3.00
.97	.49	1.90	1.45	4.81	4.11	.26	7.51	.22	7.99	7.00	7.77	5.00	4.83*	4.00
1.47	.05	.30	.29	2.11	2.06	4.08	4.31	.97	9.36	7.00	8.39	6.00	3.85	3.50
1.94	.14	.81	.54	3.43	3.30	6.61	2.70	.59	9.90	9.00	9.31	8.00	4.09*	4.00
1.03	—	.13	.18	1.34	1.23	5.20	4.21	.92	10.33	9.00	9.41	8.00	2.08	2.00
1.67	.43	.55	.46	3.11	2.50	.61	8.06	2.35	11.02	11.00	8.67	7.00	4.03	5.00
2.63	.51	1.04	.74	4.92	5.00	.87	6.86	.92	8.65	10.00	7.73	9.00	2.14	1.00
2.85	1.19	.52	.41	4.97	3.28	2.55	4.90	6.35	13.80	9.00	7.45	8.00	6.21	4.00
.51	1.11	.41	.41	2.44	2.05	3.67	5.41	10.36	19.44	9.00	9.08	8.00	3.33	3.00

* No. 1173 Chlorine .38% equivalent to .51% potash, 3.63% potash as sulfate.
" 579 " 1.95% " " 2.60% " 1.10% " " "
" 1136-1177 " 2.21% " " 2.93% " .92% " " "
" 1172-1178 " .85% " " 1.13% " 2.27% " " "
" 281-322+ " .58% " " .77% " 4.06% " " "
" 221-275+ " 2.20% " " 2.92% " 1.17% " " "

Fertilizers Furnishing Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
PHOSPHATE AND POTASH				
American Agric. Chem. Co., Boston, Mass.				
Grass and Oats Fertilizer	S. Braintree	$12.05	1208	9.07
Coe-Mortimer Co., New York City.				
Famous Prize Brand Grass & Grain Fert. " " " " " "	Williamsburg Belchertown	11.83	1041 1192	8.35
Lister's Agric. Chem. Works, Newark, N. J.				
Lister's Grain and Grass Fertilizer " " " " "	Fall River Williamstown	11.84	517 1161	10.01
WOOD ASHES				
Joseph Breck & Sons, Boston, Mass.				
Breck's High Grade Hardwood Ashes	Boston	19.86	529	.71
John Joynt, Lucknow, Ontario, Canada.				
Canada Unleached Hardwood Ashes	Sunderland	6.95	58	10.84
Canada Unleached Hardwood Ashes	Amherst	13.68	147	8.95
Canada Unleached Hardwood Ashes	N. Hadley	13.04	173	13.30
Canada Unleached Hardwood Ashes	Fitchburg	8.59	861	14.24
Canada Unleached Hardwood Ashes	Granby	10.60	1230	15.15
Canada Unleached Hardwood Ashes	Northfield	12.07	1231	19.44
Canada Unleached Hardwood Ashes	Amherst	12.03	1243	19.04
Canada Unleached Hardwood Ashes	Concord	11.92	1254	15.21
Canada Unleached Hardwood Ashes	Auburn	12.15	1256	16.79
Canada Unleached Hardwood Ashes	Northfield	11.83	1257	21.02
Canada Unleached Hardwood Ashes	Hathorne	9.15	1262	1.53
Canada Unleached Hardwood Ashes	Cushman	5.85	1263	32.88
George L. Munroe & Sons, Oswego, N. Y.				
Pure Unleached Wood Ashes	S. Deerfield	7.12	131	14.94
Pure Unleached Wood Ashes	Sunderland	10.36	1229	20.40
Pure Unleached Wood Ashes	Westboro	8.36	1255	1.87
Pure Unleached Wood Ashes	Easthampton	7.64	1266	26.18

Fertilizers Furnishing Phosphoric Acid and Potash.

Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.		Acid Soluble Potash.	Calcium Oxide (Ca O) in 100 lbs.
			Total.		Available.					
Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.		
5.29	5.48	.97	11.74	12.00	10.77	11.00	2.11	2.00	—	—
5.55	5.16	.77	11.48	11.00	10.71	10.00	2.04	2.00	—	—
5.42	4.58	.94	10.94	11.00	10.00	10.00	2.30	2.00	-	—
—	—	—	1.45	1.00	—	—	7.00	7.00	7.79	40.33
—	—	—	1.07	1.00	—	—	1.92	3.00	2.36	24.02
—	—	—	1.38	1.00	—	—	4.44	3.00	4.94	35.16
—	—	—	1.34	1.00	—	—	4.21	3.00	4.52	33.86
—	—	—	1.05	1.00	—	—	2.57	3.00	3.07	25.24
—	—	—	1.76	1.00	—	—	3.43	3.00	4.94	21.55
—	—	—	1.91	1.00	—	—	3.74	3.00	5.66	29.89
—	—	—	.15	1.00	—	—	4.20	3.00	5.44	32.06
—	—	—	.18	1.00	—	—	4.26	3.00	5.32	28.64
—	—	—	1.45	1.00	—	—	3.80	3.00	4.50	33.28
—	—	—	1.31	1.00	—	—	3.93	3.00	4.40	26.82
—	-	—	1.17	1.00	—	—	—	3.00	2.79	26.49
—	—	—	1.03	1.00	—	—	1.54	3.00	2.15	21.24
—	—	—	1.10	.50	—	—	1.88	1.00	2.52	26.99
—	—	—	1.33	.50	—	—	3.14	1.00	5.03	30.40
—	—	—	.27	.50	—	—	2.22	1.00	3.86	40.26
—	—	—	1.14	.50	—	—	2.10	1.00	3.21	27.03

Fertilizers for Private Use, Officially Collected but not Registered.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
COMPLETE FERTILIZERS				
Berkshire Fertilizer Co., Bridgeport, Conn.				
Berkshire Special Mixture	N. Hadley	$30.73	482	9.20
A. W. Higgins, Westfield, Mass.				
Home Mixture	N. Hadley	26.48	701	7.08
New England Fertilizer Co., Boston, Mass.				
New England Potato and Vegetable	Billerica	26.47	804	8.38
Olds and Whipple, Hartford, Conn.				
Special Home Mixture	Hadley	27.46	1128	7.02
Parmenter and Polsey Fertilizer Co., Boston, Mass.				
AA Brand (1914 Goods)	N. Attleboro	29.55	831	13.71
Rogers and Hubbard Co., Middletown, Conn.				
Fairman Special	N. Hadley	28.75	780	7.20
Pellissier Special	Hadley	26.22	727	5.59
The Wunsch Manufacturing Co., Pawtucket, R. I.				
Superior Brand Fertilizer	Seekonk	27.96	555	12.23
B. F. Wallace & Co., 1106 Metropol. Ave., Brooklyn, N. Y.				
Natural Humus	Fall River	2.61	564	66.38
NITROGEN COMPOUNDS				
F. S. Royster Guano Co., Baltimore, Md.				
Nitrate of Soda	Middleboro	46.02	1215	1.65
New England Gas & Coke Co., Shawmut Bk. Bld., Boston				
Sulfate of Ammonia	Amherst	64.29	1235	1.26
American Cyanamid Co., Niagara Falls, N. Y.				
Cyanamid	Easthampton	44.27	906	1.60
"	Framingham		938	
Ammo-Phos	Amherst	62.71	1259	7.53
Coe-Mortimer Co., New York City.				
Calcium Cyanamid	Amherst	56.02	1251	1.78
Rogers and Hubbard Co., Middletown, Conn.				
Cyanamid	Hadley	45.45	730	.40
Lowell Fertilizer Co., Boston, Mass.				
Blood Meal	Segreganset	53.98	500	13.11
Armour Fertilizer Works, Baltimore, Md.				
Hoof Meal	Amherst	47.61	1236	6.92

Fertilizers for Private Use, Officially Collected but not Registered.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.43	.48	1.91	1.82	5.64	4.08	1.02	3.32	1.45	5.79	5.20	4.34	3.50	3.60*	2.40
1.28	.85	1.17	.61	3.91	3.60	.57	6.19	1.81	8.57	7.50	6.76	6.50	3.84*	3.40
1.12	.87	.94	.49	3.42	3.28	6.29	2.20	.87	9.36	9.00	8.49	8.00	4.38	4.00
1.00	.16	2.23	1.27	4.66	—	.57	3.54	—	4.11	—	4.11	—	4.08*	—
2.14	.09	1.00	.35	3.58	4.10	5.17	1.36	.33	6.86	8.00	6.53	7.00	7.32	8.00
.25	.40	2.88	1.94	5.47	5.65	.26	7.59	1.28	9.13	8.50	7.85	—	1.18*	1.05
.30	.25	2.19	1.76	4.50	4.60	.06	3.74	2.68	6.48	5.70	3.80	—	2.97*	2.75
1.62	.33	.57	.56	3.08	3.30	2.30	3.72	4.21	10.23	9.00	6.02	6.00	6.63	6.00
.03	—	.32	.60	.95	2.92	—	—	—	.12	.43	—	—	trace	.53
15.34	—	—	—	15.34	—	—	—	—	—	—	—	—	—	—
20.74	—	—	—	20.74	—	—	—	—	—	—	—	—	—	—
—	13.62	.49	.17	14.28	14.00	—	—	—	—	—	—	—	—	—
10.33	—	—	—	10.33	10.00	26.44	12.83	1.40	40.67	40.00	39.27	—	—	—
—	—	—	—	18.07	—	—	—	—	—	—	—	—	—	—
—	13.81	.49	.36	14.66	14.00	—	—	—	—	—	—	—	—	—
.20	.59	9.53	2.93	13.25	13.00	—	—	—	.97	—	—	—	—	—
—	1.04	8.91	2.58	12.53	—	—	—	—	—	—	—	—	—	—

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* No. 482 Chlorine .45% equivalent to .60% potash, 3.00% potash as sulfate.
" 701 " .59% " " .79% " 3.05% " " "
" 1128 " .52% " " .69% " 3.39% " " "
" 780 " .55% " " .73% " .45% " " "
" 727 " .20% " " .26% " 2.71% " " "

Fertilizers for Private Use, Officially Collected but not Registered.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost of Like Amounts of Nitrogen, Phos. Acid and Potash in Unmixed Materials.	Laboratory Number.	Moisture.
Feeders' Supply Co., Kansas City, Mo.				
Equity Brand Cottonseed Meal	Westfield	$28.16	76	7.05
Imperial Cotto Milling Co., Chicago, Ill.				
Imperial Cotto Cottonseed Meal	Easthampton	26.40	574	8.94
Pilotpoint Cotton Oil Co., Denton, Texas.				
Cottonseed Meal	N. Hadley	29.40	111	7.61
Southern Cotton Oil Co., Charlotte, N. C.				
Aurora Brand Cottonseed Meal	Oxford	26.40	910	8.66
Union Brokerage & Commission Co., New Orleans, La.				
Durjan Brand Choice Cottonseed Meal	Lawrence	26.72	634	8.78
Wilcox Fertilizer Co., Mystic, Conn.				
Meat and Bone	Deerfield	26.94	450	8.53
International Agric. Corporation, Buffalo, N. Y.				
Buffalo Dry Ground Fish	Florence	38.26	1227	10.95
Rogers and Hubbard Co., Middletown, Conn.				
Fish Scrap	Hadley	41.02	729	6.19
POTASH COMPOUNDS				
American Agric. Chemical Co., Boston, Mass.				
High Grade Sulfate of Potash	Amherst	95.38	1233	1.91
Low Grade Sulfate of Potash	Amherst	49.78	1232	7.35
Muriate of Potash	Amherst	86.16	1234	1.28
PHOSPHORIC ACID COMPOUNDS				
Lowell Fertilizer Co., Boston, Mass.				
Basic Slag Meal	Billerica	10.90	800	.17
Tennessee Coal Iron and R. R. Co., Birmingham, Ala.				
American Slag	Amherst	12.61	1238	.10
Wilcox Fertilizer Co., Mystic, Conn.				
Basic Slag Meal	Amherst	10.89	291	.25
" " "	New Bedford		401	
Florence Mfg. Co., Florence, Mass.				
Raw Ground Bone Dust	Haydenville	36.68	1043	6.02
State Farm, Titicut, Mass.				
Ground Steamed Bone	Titicut	29.82	559	2.74
Federal Chemical Co.				
Tennessee Rock Phosphate	Amherst	11.38	1246	1.02
GROUND ROCK				
New Mineral Fertilizer Co., Boston.				
Wonder Mineral Plant Food	Boston	.50	592	.10

Fertilizers for Private Use, Officially Collected but not Registered

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total					Total		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
—	—	—	—	7.04	—	—	—	—	—	—	—	—	—	—
—	—	—	—	6.60	6.56	—	—	—	—	—	—	—	—	—
—	—	—	—	7.35	7.50	—	—	—	—	—	—	—	—	—
—	—	—	—	6.60	—	—	—	—	—	—	—	—	—	—
—	—	—	—	6.68	6.58	—	—	—	—	—	—	—	—	—
.30	1.64	1.68	1.33	4.95	4.12	—	—	—	9.44	12.00	—	—	—	—
.95	1.33	3.48	1.40	7.16	6.60	—	9.10	.98	10.08	6.00	9.10	—	—	—
.35	.49	4.25	1.93	7.02	—	.42	11.21	4.85	16.48	—	11.63	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	50.20	50.00
—	—	—	—	—	—	—	—	—	—	—	—	—	26.20	26.00
—	—	—	—	—	—	—	—	—	—	—	—	—	50.[illegible]	49.00
—	—	—	—	—	—	—	14.39	2.07	16.46	—	14.39	—	—	—
—	—	—	—	—	—	—	16.25	3.07	19.32	18.00	16.25	14.00	—	—
—	—	—	—	—	—	—	15.01	.96	15.97	16.00	15.01	14.00	—	—
.13	—	3.17	.84	4.14	—	—	—	—	25.82*	—	—	—	—	—
.03	.45	.43	.35	1.26	—	—	—	—	32.07*	—	—	—	—	—
—	—	—	—	—	—	—	—	—	28.45	—	—	—	—	—
—	—	—	—	.08	—	—	—	—	.09	.23	—	—	.09	2.09

* No. 1043 Mechanical Analysis, Fine Bone 76.85%. Coarse Bone 23.15%.
" 555 " " " " 73 44%. " " 26.56%.

Ground Bone.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.
American Agricultural Chemical Co., Boston, Mass.				
Fine Ground Bone	Newburyport	$29.88	673	3.50
" " "	S. Amherst		739	
" " "	W. Brookfield		1027	
Farquhar's Fine Ground Bone	Boston	28.46	629	3.70
Armour Fertilizer Works, Baltimore, Md.				
Bone Meal	Newton Low. Falls	28.65	1212	4.41
Beach Soap Co., Lawrence, Mass.				
Fertilizer Bone	Lawrence	31.98	646	3.40
Bowker Fertilizer Co., Boston, Mass.				
Fresh Ground Bone	Dighton	29.69	545	3.66
" " "	Bridgewater		713	
" " "	N. Attleboro		834	
" " "	Ayer		916	
E. D. Chittenden Co., Bridgeport, Conn.				
Chittenden's Ground Bone	Leominster	31.97	860	2.36
Coe-Mortimer Co., New York City.				
E. Frank Coe's Fine Ground Bone	Sunderland	27.96	1169	3.96
E. Frank Coe's Steamed Bone	Amherst	27.14	1248	3.97
John C. Dow and Co., Boston, Mass.				
Pure Ground Bone	Boston	27.52	528	5.47
" " "	Concord		665	
" " "	Whitman		814	
Pure Ground Bone	Boston	28.12	1265	4.03
Essex Fertilizer Co., Boston, Mass.				
Essex Ground Bone	Taunton	32.16	420	4.38
" " "	Marlboro		1113	
Thomas Hersom & Co., New Bedford, Mass.				
Pure Bone Meal	New Bedford	29.54	402	6.41
Home Soap Co., Worcester, Mass.				
Pure Ground Bone	Worcester	29.11	1096	2.53
International Agric. Corp., Buffalo, N. Y.				
Buffalo Bone Meal	Lee	23.96	1157	5.60
Lister's Agric. Chemical Works, Newark, N. J.				
Lister's Bone Meal	Natick	28.21	709	3.87
Lowell Fertilizer Co., Boston, Mass.				
Lowell Ground Bone	Fall River	32.72	335	3.39
" " "	Raynham		417	
" " "	Fall River		516	
" " "	Milford		884	
" " "	Webster		951	
Geo. E. Marsh Co., Lynn, Mass.				
Marsh's Pure Bone Meal	Lynn	31.47	1003	2.98
Nitrate Agencies Co., New York City.				
Bone Meal	Seekonk	32.76	515	4.91
Ground Bone	N. Amherst	28.57	779	11.53
" "	Worcester		962	
Carroll S. Page, Hyde Park, Vt.				
Ground Bone	Westford	31.22	1090	10.08

Ground Bone.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Mechanical Analysis	
				Total					Total		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Fine Bone.	Course Bone.
.20	.61	1.12	.69	2.62	2.47	—	—	—	25.67	22.80	—	—	64.48	35.52
.17	.56	.94	.82	2.49	2.47	—	—	—	24.24	22.00	—	—	68.62	31.38
1.09	.20	.80	.52	2.61	2.47	—	—	—	24.31	22.00	—	—	61.26	38.74
.07	.85	1.05	.74	2.71	2.67	—	—	—	26.74	20.00	—	—	83.60	16.40
.21	.66	1.08	.85	2.80	2.47	—	—	—	24.75	22.88	—	—	60.20	39.80
—	.75	1.25	.95	2.95	2.47	—	—	—	25.23	22.88	—	—	87.47	12.53
.18	.58	1.13	.65	2.54	2.47	—	—	—	23.83	22.88	—	—	59.98	40.02
—	—	—	—	2.11	—	—	—	—	24.38	—	—	—	70.19	29.81
.04	.60	.72	.50	1.86	2.00	—	—	—	26.33	24.00	—	—	67.13	32.87
—	.77	.81	.71	2.29	2.00	—	—	—	25.23	24.00	—	—	61.38	38.62
.06	1.16	.83	.75	2.80	2.46	—	—	—	27.35	23.00	—	—	70.19	29.81
.02	1.06	.55	.53	2.16	2.00	—	—	—	26.94	24.00	—	—	75.31	24.69
.14	.69	.56	.47	1.86	2.00	—	—	—	29.52	28.00	—	—	47.72	52.28
.27	.76	1.05	.85	2.93	2.40	—	—	—	16.61	22.00	—	—	59.17	40.83
.19	.49	1.38	.76	2.82	2.67	—	—	—	22.63	23.00	—	—	61.35	38.65
.09	.97	1.28	.52	2.86	2.46	—	—	—	26.92	23.00	—	—	83.29	16.71
.44	1.04	.71	.69	2.88	2.46	—	—	—	25.92	26.00	—	—	72.14	27.86
.10	.48	1.41	1.38	3.37	3.70	—	—	—	24.26	22.88	—	—	84.19	15.81
.18	.47	.81	.41	1.87	2.46	—	—	—	28.37	22.88	—	—	54.31	45.69
.15	.12	2.90	.66	3.83	3.30	—	—	—	23.15	20.00	—	—	37.20	62.80

Ground Bone, Dissolved Bone and Tankage.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.
GROUND BONE (Concluded).				
Rogers Manufacturing Co., Rockfall, Conn.				
Fine Ground Bone	Dighton	$35.47	437	10.97
" " "	Deerfield		458	
" " "	N. Hadley		487	
" " "	Hadley		728	
" " "	Fitchburg		855	
Pure Knuckle Bone Flour	Pittsfield	34.31	1151	8.80
Raw Knuckle Bone	Amherst	35.86	1240	9.52
Rogers and Hubbard Co., Middletown, Conn.				
Prize Raw Knuckle Bone Flour	E. Milton	34.58	754	8.34
Strictly Pure Fine Bone	E. Northfield	31.59	1197	6.34
Sanderson Fertilizer and Chem. Co., New Haven, Conn.				
Sanderson's Fine Ground Bone	Hatfield	30.22	387	5.05
" " " "	Fall River		473	
M. L. Shoemaker & Co., Ltd., Philadelphia, Pa.				
Swift-Sure Bone Meal	Sunderland	38.67	323	3.88
Springfield Rendering Co., Springfield, Mass.				
Springfield Ground Bone	Springfield	31.10	988	4.10
" " "	W. Brookfield		1010	
Whitman and Pratt Rend. Co., Lowell, Mass.				
Pure Ground Bone	S. Lowell	32.00	757	5.45
" " "	Springfield		1221	
Wilcox Fertilizer Works, Mystic, Conn.				
Pure Ground Bone	New Bedford	28.50	366	5.71
S. Winter, Brockton, Mass.				
Pure Ground Bone	Amherst	31.69	1189	6.43
Worcester Rendering Co., Auburn, Mass.				
Ground Steamed Bone	Worcester	29.98	978	3.75
DISSOLVED BONE				
W. H. Abbott, Holyoke, Mass.				
Abbott's Animal Fertilizer	Bradstreet	24.80	280	4.88
" " "	Deerfield		451	
Mapes Formula and Peruv. Gua. Co., New York City.				
Mapes' Dissolved Bone	Conway	23.32	1144	4.93
Mapes' Dissolved Bone	Amherst	23.70	1244	8.13
TANKAGE				
American Agric. Chem. Co., Boston, Mass.				
Ground Tankage	S. Amherst	32.45	735	4.35
Ground Tankage 9%	Boston	37.76	527	4.41
Bowker Fertilizer Co., Boston, Mass.				
Bowker's 6% Fine Ground Bone Tankage	Charlton	32.21	934	4.40
Coe-Mortimer Co., New York City.				
Ground Tankage, 6%	Westford	33.10	1095	5.10
Ground Tankage, 9%	W. Millbury	36.75	1118	5.29
" " "	Sunderland		1168	
" " "	Mt. Hermon		1200	
Ground Tankage	Amherst	36.96	1242	5.02
Thomas Hersom and Co., New Bedford, Mass.				
Meat and Bone	New Bedford	34.07	386	5.15
Lowell Fertilizer Co., Boston, Mass.				
Lowell Ground Tankage	S. Westport	34.38	467	7.44
" " "	Segreganset		504	
" " "	Billerica		796	

Ground Bone, Dissolved Bone and Tankage.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Mechanical Analysis.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Walter Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Fine Bone.	Coarse Bone.
.18	.18	2.25	.89	3.50	3.50	—	—	—	26.35	25.00	—	—	94.35	5.65
.10	.03	3.05	.68	3.86	3.80	—	—	—	25.54	24.00	—	—	58.57	41.43
—	.18	2.94	.65	3.77	3.80	—	—	—	27.63	24.00	—	—	64.20	35.80
.09	.06	2.41	1.50	4.06	3.82	—	—	—	25.41	24.70	—	—	51.45	48.55
.16	.46	2.12	.92	3.66	3.70	—	—	—	23.34	22.00	—	—	53.47	46.53
.20	.86	1.10	.84	3.00	2.47	—	—	—	24.93	20.00	—	—	52.60	47.40
.10	1.83	2.32	1.12	5.37	4.53	—	—	—	22.65	20.00	—	—	69.43	30.57
.13	.51	1.31	.61	2.56	2.47	—	—	—	26.53	23.00	—	—	81.33	18.67
.11	1.01	1.21	.52	2.85	2.46	—	—	—	27.09	22.00	—	—	67.04	32.96
.14	.29	1.50	.62	2.55	2.46	—	—	—	23.57	22.00	—	—	75.73	24.27
.16	1.63	1.68	.99	4.46	3.25	—	—	—	21.86	24.15	—	—	21.11	78.89
.09	1.38	.85	.59	2.91	2.47	—	—	—	24.90	23.00	—	—	55.00	45.00
.51	.64	1.48	.92	3.55	3.00	.80	9.19	11.49	21.48	15.00	9.99	11.00	—	—
.13	.97	.75	.59	2.44	2.06	4.82	13.88	1.15	19.85	—	18.70	12.00	—	—
—	.95	.98	.59	2.52	2.06	3.51	13.79	4.16	21.46	—	17.30	12.00	—	—
.02	.74	3.01	1.38	5.15	4.94	—	—	—	16.91	13.73	—	—	53.46	46.54
.13	.65	4.11	3.03	7.92	7.41	—	—	—	10.87	9.15	—	—	43.28	56.72
.13	.39	2.29	2.29	5.10	4.94	—	—	—	16.76	13.73	—	—	54.49	45.51
.20	1.06	2.35	1.65	5.26	4.94	—	—	—	17.28	13.73	—	—	52.50	47.50
.17	.38	4.58	2.60	7.73	7.41	—	—	—	10.23	9.15	—	—	45.90	54.10
—	—	—	—	7.40	7.41	—	—	—	11.28	9.15	—	—	55.47	44.53
.13	.38	2.48	1.82	4.81	4.00	—	—	—	18.90	16.00	—	—	78.09	21.91
.40	2.83	1.58	1.57	6.38	6.00	—	—	—	13.37	14.00	—	—	51.63	48.37

Tankage and Dry Ground Fish.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.
TANKAGE (Concluded)				
Geo. Marsh and Co., Lynn, Mass.				
Ground Tankage	Concord	$34.05	666	7.02
Nitrate Agencies Co., New York City.				
Canadian Ground Tankage	Titicut	31.76	558	5.01
Sanderson Fert. and Chemical Co., New Haven, Conn.				
Sanderson's Fine Ground Tankage	Three Rivers	32.56	1123	6.30
J. M. Woodard, Greenfield, Mass.				
Unground Tankage	Greenfield	31.13	870	5.73
Worcester Rendering Co., Auburn, Mass.				
Fine Ground Tankage	Auburn	35.11	946	6.63
W. J. Tavender, 14 Paisley Park, Boston, Mass.				
Am-Pho-Nite,*	Boston	9.48	822	4.80
DRY GROUND FISH				
American Agric. Chemical Co., Boston, Mass.				
Dry Ground Fish	Sunderland	43.33	195	6.22
" " "	Bradstreet		203	
" " "	Sunderland		222	
" " "	Bradstreet		234	
" " "	Sunderland		255	
Berkshire Fertilizer Co., Bridgeport, Conn.				
Dry Ground Fish	N. Hadley	42.22	119	6.94
" " "	N. Hadley		163	
" " "	N. Hadley		228	
Bowker Fertilizer Co., Boston, Mass.				
Bowker's Dry Ground Fish	Hatfield	39.51	357	6.35
E. D. Chittenden Co., Bridgeport, Conn.				
Dry Ground Fish	Hatfield	36.26	309	9.39
Dry Ground Fish	Hadley	36.79	311	9.20
A. W. Higgins, Westfield, Mass.				
Dry Ground Fish	Boston	47.96	7	9.21
Dry Ground Fish	S. Deerfield	46.96	105	11.36
" " "	Amherst		106	
" " "	N. Hadley		152	
" " "	N. Hadley		154	
" " "	Feeding Hills		175	
" " "	Sunderland		299	
Dry Ground Fish	Westfield	47.60	1253	8.65
Olds and Whipple, Hartford, Conn.				
Dry Ground Fish	N. Hadley	43.69	145	8.85
" " "	N. Hadley		168	
Sanderson Fertilizer and Chem. Co., New Haven, Conn.				
Fine Ground Fish	Sunderland	42.46	189	14.33
" " "	S. Deerfield		430	
" " "	Agawam		1049	
Wilcox Fertilizer Co., Mystic, Conn.				
Dry Ground Fish Guano	Amherst	45.70	288	10.55
" " " "	Deerfield		460	
" " " "	Westfield		899	
Dry Ground Fish Guano	Amherst	44.06	1237	7.54

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* Product from sewerage purification to which some tankage has been added.

Tankage and Dry Ground Fish.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Mechanical Analysis.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Fine Bone.	Coarse Bone.
.20	1.59	2.62	1.83	6.24	5.00	—	—	—	12.70	12.00	—	—	62.98	37.02
.23	.34	2.68	1.76	5.01	5.75	—	—	—	16.28	13.73	—	—	59.16	40.84
.29	2.45	.93	.65	4.32	4.94	—	—	—	20.03	12.00	—	—	70.60	29.40
.26	.91	2.16	1.13	4.46	4.50	—	—	—	20.31	18.00	—	—	—	—
.31	4.49	1.16	.98	6.94	7.00	—	—	—	12.09	12.00	—	—	45.13	54.87
.09	.16	.43	.80	1.48	.25	.13	4.34	1.96	6.43	1.25	4.47	.05	—	—
.42	.62	4.72	2.68	8.44	8.23	—	5.79	2.09	7.88	6.00	5.79	—	—	—
.36	.49	5.35	2.23	8.43	8.23	—	4.13	2.81	6.94	6.00	4.13	—	—	—
.32	.63	4.50	2.48	7.93	8.23	.68	5.39	.77	6.84	6.00	6.07	—	—	—
.51	.03	3.98	2.91	7.43	8.20	—	4.57	.92	5.49	6.00	4.57	—	—	—
.46	.12	4.23	2.70	7.51	8.20	—	4.85	.84	5.69	6.00	4.85	—	—	—
.43	3.96	3.75	1.53	9.67	9.00	—	6.79	1.65	8.44	8.00	6.79	—	—	—
.41	2.93	4.00	2.19	9.53	9.00	—	6.96	.41	7.37	8.00	6.96	—	—	—
—	3.94	4.06	1.63	9.63	9.00	1.57	4.78	1.56	7.91	8.00	6.35	—	—	—
.37	.45	4.84	3.22	8.88	7.40	.77	5.58	.23	6.58	5.50	6.35	4.50	—	—
1.32	1.74	3.29	2.18	8.53	8.20	—	6.48	.97	7.45	6.00	6.48	—	—	—
.43	2.36	3.85	2.70	9.34	8.24	—	6.02	.97	6.99	6.00	6.02	4.00	—	—
—	.73	5.04	3.38	9.15	8.24	.80	3.14	2.40	6.34	6.00	3.94	4.00	—	—

Lime Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Chemical Analysis of Lime Products.						
		Moisture.	Calcium Oxide (CaO). Found.	Calcium Oxide (CaO). Guaranteed.	Magnesium Oxide (MgO). Found.	Magnesium Oxide (MgO). Guaranteed.	Carbonic Acid (CO_2.)	Insoluble Matter.
BURNED OR CAUSTIC LIME.								
Green Mountain Lime Co., Middleboro, Vt.								
Burned Lime	Andover	—	76.36	95.	1.20	—	.36	15.6
New England Lime Co., Danbury, Conn.								
Fresh Burned Granulated Lime, "Adams"	Amherst	—	92.89	80–100	.49	0–3	1.40	1.4
HYDRATED OR SLAKED LIME.								
Berkshire Hills Co., Sheffield, Mass.								
Berkshire Hills Agricultural Lime	Sheffield	—	61.44	56–60	6.97	5–7	13.74	8.6
Cheshire Lime Manufacturing Co., Cheshire, Mass.								
Cheshire Agricultural Lime	Cheshire	.10	58.37	58	2.06	.6	26.34	1.2
Farnum Cheshire Lime Co., Farnams, Mass.								
Agricultural Lime	W. Millbury	—	60.06	60.	.25	0–1.5	26.93	1.5
Green Mountain Lime Co., Middleboro, Vt.								
Agricultural Lime	N. Hadley	6.17	58.74	50.	.83	—	9.34	3.2
Green Mountain Agricultural Lime	Amherst	—	74.59	55.–95.	.67	—	1.35	2.2
Hoosac Valley Lime Co., Adams, Mass.								
Adams Agricultural Lime	N. Hadley	.51	59.68	52.6–72.64	.57	.44–1.14	20.34	4.9
Adams Agricultural Lime	Shelburne Falls	5.21	59.98	52.6–72.64	2.06	.44–1.14	14.99	2.4
New England Lime Co., Danbury, Conn.								
Adams Agricultural Lime	Amherst	8.01	59.92	50.–75.	2.16	0–4.	5.73	3.
Connecticut Agricultural Lime	Norwood	—	54.21	40–65.	22.25	15.–45.	2.68	1.
Olds & Whipple, Hartford, Conn.								
O. & W. Agricultural Lime	N. Hadley	—	60.73	60.–75.	.70	0–1.5	27.10	.
Rockland & Rockport Lime Co., Rockland, Me.								
R. R. Land Lime	Fall River	—	63.60	60–65	.90	1–5	12.88	1.3
" " "	Concord							
" " "	Framingham							
Tobey Lime Co., West Stockbridge, Mass.								
Agricultural Lime	West Stockbridge	.73	61.09	50–75	3.71	1–10	15.14	2.0
West Stockbridge Lime Co., West Stockbridge.								
Agricultural Lime	West Stockbridge	.01	63.14	60–85	6.48	0–15	6.22	1.5
LIME ASHES.								
Hoosac Valley Lime Co., Adams, Mass.								
Adams Lime Ashes	Bradstreet	1.27	59.56	30.9–44.9	.62	1.–1.50	10.40	5.0
" " "	Amherst							
Lime Ashes	Bradstreet	1.27	53.56	30.9–44.9	1.10	1–1.50	—	10.4
Adams Lime Ashes	Shelburne Falls	9.89	54.91	30.9–44.9	—	1–1.50	—	3.9
New England Lime Co., Canaan, Conn.								
Canaan Lime Ashes	Amherst	13.02	32.70	20–40	11.58	10–20	25.05	4.6

Lime Compounds.

Laboratory Number.	Cost of 100 lbs. of Calcium and Magnesium Oxides.	Probable Composition of Lime Products as based upon foregoing Analyses.						
		Free Calcium Oxide (CaO).	Free Magnesium Oxide (MgO).	Hydrated or Slaked Lime (Calcium Hydrate $(Ca(OH)_2)$.	Calcium Carbonate ($CaCO_3$).	Magnesium Carbonate ($MgCO_3$).	Guaranteed Calcium and Magnesium Carbonates Combined.	Magnesium Hydrate ($Mg(OH)_2$.)
A 50	$ .50a	55.90	—	26.43	.82	—	—	1.74
A 43	.40–.48a	79.95	—	14.72	3.21	—	—	.71
A 39	.37a	25.10	—	24.87	31.26	—	33.	10.08
A 41	.35–.43a	—	—	32.76	59.92	—	25.	2.98
A 36	.41–.50b	—	—	34.00	61.26	—	50.	.36
A 4	.38a	—	—	61.88	21.25	—	—	1.20
A 45	.30a	8.00	—	85.72	3.07	—	—	.97
A 3	.37–.41a	—	—	44.60	46.27	—	.28	.82
A 53	.38a	—	—	54.01	34.10	—	.28	2.98
A 42	.32–.43a	—	—	69.53	13.03	—	—	3.13
A 21	.35–.42a	19.93	—	40.78	6.10	—	10.	32.19
A 24	.61c	—	—	34.59	61.65	—	50–60	1.01
A 19 A 27 A 31	.62–.66c	—	—	62.34	29.30	—	30.	1.30
A 46	.32–.40a	—	—	55.22	34.44	—	0–30	5.37
A 37	.29a	—	—	72.95	14.15	—	25.	9.38
A 7* A 9*	.37–.42a	—	—	61.18	23.66	—	—	.90
A 51*	.30–.37a	—	—	—	—	—	—	—
A 54*	.29–.35a	—	—	—	—	—	—	—
A 44*	.35–.46a	—	—	1.02	56.98	—	—	16.75

a. Car lots in bulk for cash delivered
b. Car lots in bags for cash "
c. Small lots in bags for cash "

*A7-9	potassium	oxide	.26%.
A51	"	"	.22%.
A54	"	"	.33%.
A44	"	"	1.47%.

Lime Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Chemical Analysis of Lime Products.						
		Moisture.	Calcium Oxide (CaO).		Magnesium Oxide (MgO).		Carbonic Acid (CO_2).	Insoluble Matter.
			Found.	Guaranteed.	Found.	Guaranteed.		
GROUND LIMESTONE.								
Cheshire Lime Manufacturing Co., Cheshire, Mass.								
Ground Limestone	Cheshire	.04	51.82	48.-55.	2.54	1-5	—	2.
F. E. Conley Lime & Fertilizer Co., Utica, N. Y.								
Raw Ground Lime	Deerfield	.05	50.77	51.50	1.48	2-3	—	5.
Edison Portland Cement Co., Stewartsville, N. J.								
Edison Pulverized Limestone	S. Fram'ham	.04	49.62	50.00	1.35	2-4	—	6.
" " "	Framingham							
Grangers Lime and Marble Co., West Stockbridge.								
Ground Raw Limestone	Seekonk	.01	46.22	—	3.91	—	—	8.
The Hoosac Co., North Adams, Mass.								
Ground Limestone	N. Hadley	—	54.54	52.	.43	1-2	—	1.
" "	N. Hadley							
" "	N. Hadley							
" "	Fitchburg							
" "	Worcester							
New England Lime Co., Danbury, Conn.								
Fine Ground Limestone (Adams)	Adams	—	54.76	—	—	—	—	1.
Pownal Lime Co., 92 State St., Boston, Mass.								
Ground Limestone	S. Deerfield	.04	44.73	50-55	4.42	.5-4.00	—	9.
" "	Sunderland							
" "	Hatfield							
" "	S. Deerfield							
Fine Ground Limestone	S. Hadley	.05	44.76	50.-55.	4.46	.5-4.00	—	9.
" " "	Lawrence							
" " "	Agawam							
" " "	Amherst							
Ground Limestone	Boston	.08	49.34	50.-55.	3.40	.5-4.00	—	4.
Stearns Lime Co., Danbury, Conn.								
Ground Limestone	Dighton	.15	42.96	45.	5.29	1-5	—	12.
" "	W. Brookfield							
West Stockbridge Lime Co., West Stockbridge.								
Ground Limestone	West Stockbridge	.02	52.80	—	.68	—	—	4.
MARL.								
International Agricultural Corp., Buffalo, N. Y.								
Lime Carbonate (Marl)	Bardwell	2.53	48.88	50.	.45	—	—	3.
Lime Carbonate (Marl)	Hatfield	.93	49.10	50.	.64	—	—	3.
GYPSUM (Sulfate of Lime or Plaster).								
American Agricultural Chemical Co., Boston, Mass.								
Nova Scotia Land Plaster	Amherst	6.71	38.01	32.95	.25	—	1.99	1.5
" " " "	Fall River							
" " " "	New Bedford							
" " " "	Newburyport							
Bowker Fertilizer Co., Boston, Mass.								
Nova Scotia Land Plaster	Whitman	5.03	39.43	32.95	.14	—	2.54	.9
Connecticut Adamant Plaster Co., New Haven, Ct.								
Land Plaster	Gt. Barrington	17.64	32.88	—	.22	—	.52	1.1
Lowell Fertilizer Co., Boston, Mass.								
Nova Scotia Land Plaster	Fitchburg	5.46	37.89	37.07	.13	—	.72	1.0
" " " "	N. Wilbraham							

Lime Compounds.

Laboratory Number.	Cost of 100 lbs. of Calcium and Magnesium Oxides.	Equivalent in Calcium and Magnesium Carbonates.			Mechanical analysis; amounts (in percentages) that will pass various meshed sieves.				
		Calcium Carbonate ($CaCO_3$).	Magnesium Carbonate ($MgCO_3$).	Guaranteed Calcium and Magnesium Carbonates Combined.	100 Mesh.	80 Mesh.	60 Mesh.	40 Mesh.	20 Mesh.
A 40	$.39–.48a	92.47	5.31	95.	39.53	42.47	52.85	62.67	81.87
A 15	.34–.41a	90.60	3.10	97.8	32.64	34.19	39.93	46.97	71.83
A 25 A 30	.54b	88.55	2.82	89–90	89.35	91.84	97.78	99.68	100.00
A 17	.45b	82.48	8.18	90.	52.43	56.34	69.45	81.93	99.50
A 1 A 5 A 23 A 29 A 32	.41b	97.33	.90	96–98	92.23	94.66	98.88	99.81	100.00
A 52	—	97.75	—	—	98.33	99.08	100.00	—	—
A 2 A 6 A 10 A 14	.34–.46a	79.82	9.24	91–98	72.85	74.48	79.76	86.36	99.77
A 16 A 20 A 35 A 47	.34–.46a	79.87	9.33	91–98	76.11	77.90	82.54	87.15	96.75
A 48	.31–.42a	88.05	7.11	91–98	84.16	84.89	90.45	95.55	99.84
A 18 A 34	.35–.39a	76.66	11.06	87.	54.08	56.57	65.74	74.24	94.20
A 49	—	94.22	1.42	—	36.83	40.92	58.05	77.57	99.52
A 55	.64b	87.23	.94	89.23	—	—	—	—	—
A 13	.64b	87.62	1.34	89.23	55.44	58.66	68.80	77.61	90.40
								Calcium Sulfate, Gypsum ($CaSO_4$)	
								Found	Guaranteed
A 8 A 11 A 12 A 22	—	3.91	.52	—	—	—	—	86.95	80.00
A 26	—	5.44	.29	—	—	-	—	88.31	80.00
A 38	—	—	.46	—	—	—	—	79.82	—
A 28 A 33	—	1.32	.27	—	—	-	—	90.18	90.00

a. Car lots in bulk for cash delivered.
b. Car lots in bags for cash delivered.

Nitrogen Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Nitrogen in 100 lbs.	
					Found.	Guaranteed.
American Agric. Chemical Co., Boston, Mass.						
Nitrate of Soda	N. Hadley	$47.28	162	1.59	15.76	15.00
" " "	Amherst		290			
" " "	Fall River		341			
" " "	W. Springfield		484			
" " "	Boston		561			
" " "	S. Westport		562			
" " "	Millis		616			
" " "	S. Amherst		740			
Bowker Fertilizer Co., Boston, Mass.						
Nitrate of Soda	Taunton	47.70	442	1.50	15.90	15.00
" " "	Dighton		543			
" " "	Amherst		653			
" " "	Bridgewater		707			
" " "	Charlton		891			
Coe-Mortimer Co., New York City.						
Nitrate of Soda	Ayer	48.60	913	1.50	16.20	15.00
" " "	W. Millbury		1082			
" " "	Westford		1088			
Nitrate of Soda	Amherst	46.44	1245	.49	15.48	15.00
Essex Fertilizer Co., Boston, Mass.						
Nitrate of Soda	Taunton	46.02	396	1.28	15.34	15.00
A. W. Higgins, Westfield, Mass.						
Nitrate of Soda	Sunderland	46.80	301	.62	15.60	15.00
" " "	N. Hadley		692			
" " "	Hockanum		741			
Lowell Fertilizer Co., Boston, Mass.						
Nitrate of Soda	Raynham	46.23	413	1.44	15.41	15.00
" " "	Segreganset		503			
" " "	Billerica		798			
Nitrate Agencies Co., New York City.						
Nitrate of Soda	Fall River	45.18	340	2.12	15.06	15.00
" " "	New Bedford		397			
" " "	S. Deerfield		424			
" " "	Seekonk		554			
Nitrate of Soda	Seekonk	46.44	511	1.75	15.48	15.00
" " "	Titicut		597			
" " "	Easthampton		905			
" " "	Worcester		966			
" " "	S. Deerfield		1167			
Sanderson Fert. & Chem. Co., New Haven, Ct.						
Nitrate of Soda	Dighton	46.14	505	1.83	15.38	15.00
" " "	Three Rivers		1122			
Wilcox Fertilizer Co., Mystic, Conn.						
Nitrate of Soda	New Bedford	46.68	372	1.48	15.56	15.00
" " "	Deerfield		459			
" " "	N. Swansea		563			
AMMONIUM SULFATE.						
American Agri. Chem. Co., Boston, Mass.						
Sulfate of Ammonia	Sunderland	63.30	196	.93	20.42	20.16
" " "	Boston		526			
Nitrate Agencies Co., New York City.						
Sulfate of Ammonia	Titicut	64.60	594	.23	20.84	20.50

Nitrogen Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Nitrogen in 100 lbs.					
					As Nitrates and Ammoniates.	Water Soluble Organic.	Active Water Insoluble Organic.	Inactive Water Insoluble Organic.	Total.	
									Found.	Guaranteed.
CYANAMID PRODUCTS.										
A. W. Higgins, Westfield, Mass.										
Calcium Cyanamid	Feeding Hills		107							
" "	Sunderland	$48.83	300	.25	—	14.96	.55	.24	15.75	14.00
" "	N. Hadley		689							
Ammo-Phos	Westfield	63.10	1264	6.58	10.34	—	—	—	10.34*	10.00
DRIED BLOOD.										
Amer. Agric.Chem.Co., Boston.										
High Grade Dried Blood	Boston	50.56	569	8.75	.27	1.21	6.89	1.83	10.20*	9.87
Bowker Fert. Co., Boston, Mass.										
Dried Blood	Boston	51.89	583	10.15	.32	1.36	6.64	2.31	10.63*	9.87
Coe-Mortimer Co., New York City.										
High Grade Dried Blood	Westford		1094							
" " " "	W. Millbury	50.82	1110	9.19	.24	.66	7.23	2.26	10.39*	9.87
" " " "	Mt. Hermon		1196							
High Grade Dried Blood	Amherst	49.19	1249	10.54	—	1.20	6.13	2.57	9.90*	9.87
Nitrate Agencies Co., New York City.										
Dried Blood	Titicut	45.41	593	8.39	.69	.07	6.54	2.70	10.00*	9.87
COTTONSEED MEAL.										
F. W. Brode, Memphis, Tenn.										
Owl Brand Cottonseed Meal	Hadley	24.72	28	9.50	—	—	—	—	6.18	6.56
Owl Brand Cottonseed Meal	Bradstreet	27.60	35	8.70	—	—	—	—	6.90	6.99
Owl Brand Cottonseed Meal	Southwick	27.36	69	6.98	—	—	—	—	6.84	6.56
Owl Brand Cottonseed Meal	S. Deerfield	28.16	126	8.41	—	—	—	—	7.04	6.50
Owl Brand Cottonseed Meal	S. Deerfield	28.52	127	8.81	—	—	—	—	7.13	6.50
Owl Brand Cottonseed Meal	S. Deerfield	28.04	129	8.74	—	—	—	—	7.01	6.50
Owl Brand Cottonseed Meal	S. Deerfield	28.08	133	8.46	—	—	—	—	7.02	6.50
Owl Brand Cottonseed Meal	S. Deerfield	28.24	134	8.47	—	—	—	—	7.06	6.50
Owl Brand Cottonseed Meal	Westfield	25.88	149	7.01	—	—	—	—	6.47	6.50
Owl Brand Cottonseed Meal	Bradstreet	26.80	244	8.58	—	—	—	—	6.70	6.99
Owl Brand Cottonseed Meal	N. Hatfield	27.80	273	8.72	—	—	—	—	6.95	6.56
Owl Brand Cottonseed Meal	Hatfield	26.92	305	8.88	—	—	—	—	6.73	6.50
Owl Brand Cottonseed Meal	Hatfield	24.76	354	9.82	—	—	—	—	6.19	6.50
Owl Brand Cottonseed Meal	Woburn	26.04	743	9.11	—	—	—	—	6.51	6.50
Owl Brand Cottonseed Meal	Bedford	25.56	808	6.93	—	—	—	—	6.39	6.50
Owl Brand Cottonseed Meal	Charlton	26.08	894	8.47	—	—	—	—	6.52	6.58
Owl Brand Cottonseed Meal	Hatfield	26.40	1141	8.41	—	—	—	—	6.60	6.58
Owl Brand Cottonseed Meal	Hatfield	25.80	1142	8.20	—	—	—	—	6.45	6.58
The Buckeye Cot. Oil Co., Cincinnati, Ohio.										
Prime Cottonseed Meal	Hatfield	24.16	9	5.92	—	—	—	—	6.04	6.18
Prime Cottonseed Meal	Hatfield	25.52	10	6.54	—	—	—	—	6.38	6.18
Prime Cottonseed Meal	Bradstreet	26.12	39	7.76	—	—	—	—	6.53	6.18
Prime Cottonseed Meal	Bradstreet	25.64	40	7.00	—	—	—	—	6.41	6.18
Prime Cottonseed Meal	Bradstreet	25.96	41	7.43	—	—	—	—	6.49	6.18
Prime Cottonseed Meal	N. Hatfield	25.96	42	6.72	—	—	—	—	6.49	6.18
Prime Cottonseed Meal	Hatfield	24.76	85	9.27	—	—	—	—	6.19	6.18
Prime Cottonseed Meal	Hatfield	25.20	88	7.39	—	—	—	—	6.30	6.18
Prime Cottonseed Meal	Hatfield	23.60	89	7.54	—	—	—	—	5.90	6.18
Prime Cottonseed Meal	Hatfield	25.28	90	7.22	—	—	—	—	6.32	6.18
Prime Cottonseed Meal	Hatfield	25.36	91	7.46	—	—	—	—	6.34	6.18
Prime Cottonseed Meal	Bradstreet	24.60	276	6.99	—	—	—	—	6.15	6.18
Prime Cottonseed Meal	Bradstreet	25.24	277	8.05	—	—	—	—	6.31	6.18
Prime Cottonseed Meal	Hatfield	25.28	306	7.33	—	—	—	—	6.32	6.18
Prime Cottonseed Meal	Hatfield	25.32	355	7.96	—	—	—	—	6.33	6.18
Prime Cottonseed Meal	Hatfield	24.72	381	7.44	—	—	—	—	6.18	6.18
Prime Cottonseed Meal	Whately	24.76	783	9.57	—	—	—	—	6.19	6.18

* Ammo-Phos. also carries 41.03% phosphoric acid of which 28.45% is water soluble and 10.87% citrate soluble (39.32% avail. phos. acid).

* No. 569 Phosphoric Acid 8.11%.
" 583 " " 7.32%.
" 1094+ " " 7.28%.
" 1249 " " 8.04%.
" 593 " " 2.02%.

Note—Cottonseed Meal contains on the average 2 to 3 per cent of phosphoric acid and from 1.50 to 2.50 per cent of potash, of which about 1.28 per cent is water soluble.

Nitrogen Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Nitrogen in 100 lbs. Total.	
					Found.	Guaranteed.
COTTONSEED MEAL (Continued).						
S. P. Davis, Little Rock, Ark.						
Good Luck Cottonseed Meal	Charlton	$25.96	911	9.32	6.49	6.50
A. W. Higgins, Westfield, Mass.						
Cottonseed Meal	Sunderland	23.68	72	7.55	5.92	6.50
Cottonseed Meal	Feeding Hills	27.48	101	8.46	6.87	8.00
Cottonseed Meal	Feeding Hills	27.16	102	8.33	6.79	8.00
Cottonseed Meal	Feeding Hills	26.64	109	8.58	6.66	7.50
Cottonseed Meal	Sunderland	22.52	110	7.80	5.63	8.00
Cottonseed Meal	N. Hadley	23.44	114	7.57	5.86	6.50
Cottonseed Meal	Feeding Hills	28.48	344	8.83	7.12	6.50
Cottonseed Meal	Feeding Hills	25.84	345	9.14	6.46	6.50
Cottonseed Meal	Feeding Hills	29.60	346	8.46	7.40	6.50
Cottonseed Meal	Feeding Hills	29.96	347	9.62	7.49	6.50
Cottonseed Meal	Feeding Hills	29.96	348	7.86	7.49	6.50
Cottonseed Meal	Feeding Hills	25.96	349	9.06	6.49	6.50
Cottonseed Meal	Feeding Hills	28.16	350	8.03	7.04	6.50
Cottonseed Meal	Feeding Hills	29.92	351	9.09	7.48	6.50
Cottonseed Meal	Feeding Hills	28.80	352	8.34	7.20	6.50
Cottonseed Meal	Feeding Hills	25.96	353	9.56	6.49	6.50
Cottonseed Meal	Westfield	27.20	1261	9.77	6.80	6.50
Humphreys-Godwin Co., Memphis, Tenn.						
Dixie Brand Cottonseed Meal	Sunderland	26.40	1	7.89	6.60	6.56
Dixie Brand Cottonseed Meal	Sunderland	27.16	2	7.67	6.79	6.56
Dixie Brand Cottonseed Meal	Sunderland	27.56	3	8.22	6.89	6.56
Dixie Brand Cottonseed Meal	Amherst	26.40	4	6.47	6.60	6.56
Dixie Brand Cottonseed Meal	N. Amherst	27.76	5	6.54	6.94	6.56
Dixie Brand Cottonseed Meal	Amherst	24.92	6	7.49	6.23	6.56
Dixie Brand Cottonseed Meal	Cushman	27.40	8	7.68	6.85	6.56
Dixie Brand Cottonseed Meal	Sunderland	25.60	11	8.89	6.40	6.56
Dixie Brand Cottonseed Meal	Sunderland	25.92	12	8.95	6.48	6.56
Dixie Brand Cottonseed Meal	Sunderland	25.68	13	8.37	6.42	6.56
Dixie Brand Cottonseed Meal	Sunderland	25.60	14	8.73	6.40	6.56
Dixie Brand Cottonseed Meal	Easthampton	26.32	16	8.75	6.58	6.56
Dixie Brand Cottonseed Meal	Southwick	24.44	20	7.45	6.11	6.56
Dixie Brand Cottonseed Meal	Southwick	24.04	21	7.34	6.01	6.56
Dixie Brand Cottonseed Meal	Southwick	25.72	22	6.86	6.43	6.56
Dixie Brand Cottonseed Meal	Southwick	24.60	23	6.90	6.15	6.56
Dixie Brand Cottonseed Meal	Southwick	23.32	24	6.91	5.83	6.56
Dixie Brand Cottonseed Meal	Amherst	26.00	27	9.08	6.50	6.56
Dixie Brand Cottonseed Meal	Bradstreet	27.32	31	8.75	6.83	7.40
Dixie Brand Cottonseed Meal	Bradstreet	26.68	32	9.00	6.67	7.40
Dixie Brand Cottonseed Meal	Bradstreet	27.32	33	9.39	6.83	7.40
Dixie Brand Cottonseed Meal	Bradstreet	26.52	34	9.12	6.63	7.40
Dixie Brand Cottonseed Meal	N. Amherst	25.68	36	8.61	6.42	6.18
Dixie Brand Cottonseed Meal	Sunderland	24.52	37	9.35	6.13	6.18
Dixie Brand Cottonseed Meal	Sunderland	23.08	38	8.34	5.77	6.56
Dixie Brand Cottonseed Meal	Amherst	25.88	49	8.97	6.47	6.56
Dixie Brand Cottonseed Meal	Hadley	28.68	53	7.90	7.17	7.50
Dixie Brand Cottonseed Meal	Bradstreet	27.48	55	7.50	6.87	7.00
Dixie Brand Cottonseed Meal	Hatfield	28.00	63	7.85	7.00	7.50
Dixie Brand Cottonseed Meal	Amherst	26.60	64	8.06	6.65	6.56
Dixie Brand Cottonseed Meal	Hatfield	27.00	65	8.33	6.75	7.50
Dixie Brand Cottonseed Meal	Amherst	26.80	78	8.31	6.70	6.56
Dixie Brand Cottonseed Meal	N. Hadley	32.08	92	7.30	8.02	7.40
Dixie Brand Cottonseed Meal	N. Hadley	32.24	93	7.43	8.06	7.40
Dixie Brand Cottonseed Meal	Northampton	29.08	98	7.80	7.27	7.50
Dixie Brand Cottonseed Meal	Sunderland	24.56	225	8.86	6.14	6.18
Dixie Brand Cottonseed Meal	N. Hadley	27.68	232	8.36	6.92	6.18
Dixie Brand Cottonseed Meal	Sunderland	25.60	247	10.27	6.40	6.18
Dixie Brand Cottonseed Meal	S. Deerfield	31.60	422	8.34	7.90	7.50
Dixie Brand Cottonseed Meal	S. Deerfield	31.48	423	8.02	7.87	7.50

Nitrogen Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Nitrogen in 100 lbs. Total.	
					Found.	Guaranteed.
Humphreys-Godwin Co., (Concluded).						
Dixie Brand Cottonseed Meal	Northampton.	$29.28	703	8.07	7.32	8.00
Dixie Brand Cottonseed Meal	Feeding Hills	28.88	1166	8.55	7.22	6.08
Dixie Brand Cottonseed Meal	Sunderland	25.52	1241	10.00	6.38	6.56
High Grade Cottonseed Meal	Sunderland	27.88	71	8.00	6.97	8.00
Choice Cottonseed Meal	Bradstreet	32.08	96	7.92	8.02	7.68
Choice Cottonseed Meal	Bradstreet	31.44	97	7.89	7.86	7.68
Forfat Cottonseed Meal	Sunderland	25.80	15	9.65	6.45	6.18
Forfat Cottonseed Meal	Bradstreet	25.80	43	8.43	6.45	6.18
Topsy Brand Cottonseed Meal	Bradstreet	24.64	17	9.26	6.16	6.50
Topsy Brand Cottonseed Meal	Hadley	23.28	25	8.27	5.82	6.56
Topsy Brand Cottonseed Meal	Bradstreet	24.40	29	9.06	6.10	6.56
Topsy Brand Cottonseed Meal	Bradstreet	25.40	30	9.30	6.35	6.56
Topsy Brand Cottonseed Meal	Hadley	24.88	44	7.03	6.22	6.50
Topsy Brand Cottonseed Meal	Sunderland	24.00	94	7.98	6.00	6.50
Topsy Brand Cottonseed Meal	Sunderland	25.48	95	8.18	6.37	6.50
Topsy Brand Cottonseed Meal	Sunderland	24.44	113	6.72	6.11	6.50
Topsy Brand Cottonseed Meal	Sunderland	25.84	191	8.72	6.46	6.50
Topsy Brand Cottonseed Meal	S. Deerfield	25.56	784	9.13	6.39	6.50
Topsy Brand Cottonseed Meal	Bradstreet	24.68	785	9.28	6.17	6.50
Prime Cottonseed Meal	N. Hadley	30.12	79	7.55	7.53	7.04
Prime Cottonseed Meal	N. Hadley	30.28	80	7.50	7.57	7.04
Prime Cottonseed Meal	N. Hadley	29.44	81	7.98	7.36	7.04
Memphis Cottonseed Products Co., Memphis, Tenn						
Selden Brand Cottonseed Meal	Whately	28.00	86	7.29	7.00	6.56
Selden Brand Cottonseed Meal	Feeding Hills	25.44	176	8.39	6.36	6.50
Olds and Whipple, Hartford, Conn.						
Choice Cottonseed Meal	Whately	32.08	73	7.02	8.02	7.68
Cottonseed Meal	N. Hadley	30.12	160	7.43	7.53	7.40
Cottonseed Meal	N. Hadley	30.12	161	7.56	7.53	7.40
Cottonseed Meal	Bradstreet	30.68	205	7.81	7.67	7.40
Geo. B. Robinson, New York City.						
Robin Brand Cottonseed Meal	Westfield	24.32	77	7.05	6.08	6.17
W. Newton Smith, Baltimore, Md.						
Dirigo Brand Cottonseed Meal	Westfield	25.16	45	8.42	6.29	6.56
Dirigo Brand Cottonseed Meal	Westfield	25.84	46	8.40	6.46	6.56
Dirigo Brand Cottonseed Meal	Westfield	25.24	47	8.34	6.31	6.56
Dirigo Brand Cottonseed Meal	Westfield	25.92	48	8.29	6.48	6.56
Dirigo Brand Cottonseed Meal	Westfield	26.16	74	7.48	6.54	6.56
Dirigo Brand Cottonseed Meal	Westfield	25.84	75	6.85	6.46	6.56
Dirigo Brand Cottonseed Meal	Westfield	26.32	150	7.00	6.58	6.56
Dirigo Brand Cottonseed Meal	Sunderland	24.88	267	8.13	6.22	6.56
J.E.Soper Co., 206 Chamber of Com., Boston, Mass.						
Cottonseed Meal	Southwick	25.52	19	7.90	6.38	6.56
Cottonseed Meal	Southwick	27.48	18	6.50	6.87	6.56
Pilgrim Cottonseed Meal	Raynham	25.44	404	9.03	6.36	6.00
Pilgrim Cottonseed Meal	Ipswich	24.48	702	9.05	6.12	6.00
Pioneer Cottonseed Meal	Southwick	26.60	54	7.19	6.65	6.50
Pioneer Cottonseed Meal	Southwick	25.32	70	7.39	6.33	6.50
Pioneer Cottonseed Meal	Beverly	27.48	744	7.67	6.87	6.50
B. C. Stell, Norfolk, Va.						
Prime Cottonseed Meal	Hatfield	24.04	67	7.66	6.01	6.56
Prime Cottonseed Meal	Hatfield	23.52	243	7.89	5.88	6.56
Union Seed and Fertilizer Co., New York City.						
Red Tag Cottonseed Meal	Northampton.	25.36	50*	6.66	6.34	6.17
Red Tag Cottonseed Meal	Northampton.	25.00	51*	7.77	6.25	6.17
Red Tag Cottonseed Meal	Northampton.	24.92	52*	7.45	6.23	6.17
Red Tag Cottonseed Meal	Sunderland	25.16	56*	9.19	6.29	6.17
Red Tag Cottonseed Meal	Hadley	24.80	68*	6.72	6.20	6.17
Red Tag Cottonseed Meal	Northampton.	25.04	82*	8.21	6.26	6.17
Red Tag Cottonseed Meal	Hadley	25.16	83*	7.20	6.29	6.17
Red Tag Cottonseed Meal	Hadley	25.00	84*	7.21	6.25	6.17
Red Tag Cottonseed Meal	Hatfield	24.60	304*	9.11	6.15	6.17

* The Red Tag Brand Cottonseed Meal was guaranteed 1.50% potassium oxide and 2.75% phosphoric acid; it analyzed 2.11% potassium oxide and 2.75% phosphoric acid.

Castor Pomace and Potash Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Nitrogen in 100 lbs. Total. Found.	Nitrogen in 100 lbs. Total. Guaranteed.	Potash (K₂O) in 100 lbs. Total. Found.	Potash (K₂O) in 100 lbs. Total. Guaranteed.
CASTOR POMACE.								
A. W. Higgins, Westfield, Mass.								
Castor Pomace	Feeding Hills	$ 19.52	108	10.52	4.88	4.50	—	—
Castor Pomace	N. Hadley	19.32	693	10.70	4.83	4.50	—	—
Olds and Whipple, Hartford, Conn.								
Castor Pomace	Hatfield	20.24	87	6.70	5.06	5.00	—	—
Castor Pomace	Hatfield	21.36	303	6.04	5.34	5.00	—	—
Castor Pomace	Hatfield	21.16	356	7.40	5.29	5.00	—	—
Castor Pomace	W. Hatfield	20.20	1139	7.41	5.05	5.00	—	—
POTASH COMPOUNDS.								
German Kali Works, Baltimore, Md.								
High Grade Sulfate of Potash	Sunderland	94.01	324	.51	—	—	49.48	47.00
" " " " "	New Bedford		399					
" " " " "	Segreganset		501					
" " " " "	N. Hadley		700					
" " " " "	Easthampton		904					
Muriate of Potash	New Bedford	87.58	400	.71	—	—	51.52	48.00
" " "	Seekonk		506					
" " "	Titicut		598					
A. W. Higgins, Westfield, Mass.								
Carbonate of Potash	Feeding Hills	144.50	100	3.42	—	—	64.80	65.00
Carbonate of Potash	Feeding Hills	146.47	1165	2.40	—	—	65.68	65.00

Note—Castor pomace contains on the average 2.12% phosphoric acid and 1.20% potash.

Phosphoric Acid Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Phosphoric Acid in 100 lbs.						
					Water Soluble.	Reverted.	Insoluble.	Total.		Available.	
								Found.	Guaranteed.	Found.	Guaranteed.
ACID PHOSPHATE.											
Amer. Agric. Chem. Co., Boston.											
Plain Superphosphate 14 %....	Sunderland.	$11.38	201	6.48	9.06	5.23	1.17	15.46	15.00	14.29	14.00
" " "	Amherst ...		289								
" " "	Boston		525								
" " "	S. Amherst		731								
Plain Superphosphate 14 %....	Fitchburg ..	11.30	862	7.04	9.50	4.63	1.15	15.28	15.00	14.13	14.00
Plain Superphosphate 16 %....	Fall River..	13.11	333	8.88	12.35	4.03	1.02	17.40	17.00	16.38	16.00
" " "	S. Westport		477								
" " "	Framin'h'm		933								
Bowker Fert. Co., Boston, Mass.											
Acid Phosphate..............	Amherst ...	11.49	654	6.35	9.57	4.82	1.15	15.54	15.00	14.39	14.00
" "	Charlton...		893								
" "	Ayer		917								
" "	Charlton...		919								
Coe-Mortimer Co., New York City.											
High Grade Soluble Phosphate	Westford...	11.27	1089	7.88	8.33	6.08	.87	15.28	15.00	14.41	14.00
" " " "	W. Millbury		1099								
" " " "	Mt. Hermon		1201								
High Grade Acid Phosphate ...	Amherst ...	11.37	1250	10.24	10.20	4.10	.84	15.14	15.00	14.30	14.00
A. W. Higgins, Westfield, Mass.											
Acid Phosphate..............	N. Hadley .	13.66	691	6.33	13.50	3.36	1.28	18.14	—	16.86	16.00
" "	Hockanum		742								
Lowell Fert. Co., Boston, Mass.											
Acid Phosphate..............	Segreganset	11.11	502	8.70	9.48	4.99	.10	14.57	15.00	14.47	14.00
Acid Phosphate..............	S. Hadley .	9.81	1183	4.52	8.48	4.05	.48	13.01	14.00	12.53	12.00
National Fert. Co., Boston, Mass.											
Plain Superphosphate.........	Bradstreet .	13.43	99	9.09	13.43	3.33	.91	17.67	17.00	16.76	16.00
Nitrate Agencies Co., N. Y. City.											
High Grade Acid Phos.14 % Gd	Fall River..	12.78	336	7.71	13.56	2.61	.26	16.43	—	16.17	14.00
" " " " " "	N. Bedford.		403								
" " " " " "	Seekonk ...		512								
High Grade Acid Phos.16 % Gd	Westfield ..	13.57	103	10.19	14.01	3.11	.46	17.58	—	17.12	16.00
" " " " " "	S. Deerfield		104								
" " " " " "	Sunderland.		294								
" " " " " "	Sunderland.		325								
" " " " " "	S. Deerfield		431								
" " " " " "	Titicut		557								
" " " " " "	Eastham'tn		903								

Phosphoric Acid Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Retail Cash Cost at Market Centers.	Laboratory Number.	Moisture.	Phosphoric Acid in 100 lbs.						
					Water Soluble.	Reverted.	Insoluble.	Total.		Availabl	
								Found.	Guaranteed.	Found.	Guaranteed.
ACID PHOSPHATE (Concluded).											
Olds and Whipple, Hartford, Conn.											
Acid Phosphate	N. Hadley	$13.14	220	9.57	13.65	3.11	.10	16.86	—	16.76	16.0
" "	Hatfield		359								
Sanderson Fert. & Chem. Co., New Haven, Conn.											
Plain Superphosphate	Sunderland	11.97	185	7.25	6.06	9.45	1.25	16.76	—	15.51	14.0
" "	Three Riv's		1124								
DISSOLVED BONE BLACK.											
Amer. Agric. Chemical Co., Boston, Mass.											
Dissolved Bone Black	Fall River	12.94	332	9.51	12.09	3.98	1.20	17.27	16.00	16.07	15 0
" " "	Boston		536								
" " "	W. Sp'field		1179								
Dissolved Bone Black	Amherst	14.16	1239	8.35	14.22	3.12	1.51	18.85	16.00	17.34	15 0
BASIC SLAG PHOSPHATE.											
Nitrate Agencies Co., New York City.											
Basic Slag	Titicut	11.63	595	.04	—	15.14	2.69	17.83	17.00	15.14	14 0
BASIC LIME PHOSPHATE.											
American Agric. Chemical Co., Boston, Mass.											
Basic Lime Phosphate	S. Westport	11.85	476	5.41	1.21	12.64	1.51	15.36*	14.00	13.85	13.0
Coe-Mortimer Co., New York City.											
E. Frank Coe's Basic Fruit & Legume Phos.	Billerica	10.43	797	4.15	1.59	12.32	1.35	15.26	14.00	13.91	13.0
" " " " " " "	Sunderland		1170								
E. Frank Coe's Basic Fruit & Legume Phos.	Amherst	10.74	1247	8.83	2.17	11.93	1.63	15.73	14.00	14.10	13.0
Sanderson Fert. & Chem. Co., New Haven, Conn.											
Sanderson's Basic Lime Phosphate	Three Rivers	10.36	1121	5.70	.77	13.24	1.17	15.18	14.00	14.01	13.0
PRECIPITATED BONE.											
Olds and Whipple, Hartford, Conn.											
Precipitated Bone	N. Hadley	28.04	690	11.51	1.12	37.69	1.91	40.72	38.00	38.81	37.0
GROUND MINERAL OR ROCK PHOSPHATE.											
American Agric. Chem. Co., Boston, Mass.											
Ground Untreated Phosphate Rock	Fitchburg	12.12	863	.63	—	—	—	30.31	30.20	—	—
New England Phosphate Co., 28 New St., Boston.											
Phosphate of Lime, Natural	Boston	13.01	57	.63	—	—	—	32.53	31.00	—	—
Florida Natural Rock Phosphate	Boston	12.61	1009	.65	—	—	—	31.52	30.00	—	—
Phosfood for House Plants	Boston	12.86	840	.58	—	—	—	32.15	30.00	—	—
Raw Products Co., Boston, Mass.											
Florida Raw Ground Phosphate	Boston	12.54	841	.50	—	—	—	31.35	31.00	—	—

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* No. 476. Calcium oxide guaranteed 30.00%, found 29.13%. There was also 1.04% magnesium oxide present. 12.29% of the lime was apparently present in combination with the phosphoric acid, so that not more than 17.88% of calcium and magnesium oxides were present in forms similar to agricultural lime.

CONTROL SERIES. BULLETIN NO. 5. NOVEMBER, 1916.

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION

Inspection of Commercial Feedstuffs

By

P. H. SMITH

This bulletin contains the results of the protein, fat and fiber determinations and a statement of the certified ingredients, together with a general discussion of the feeding value of commercial feedstuffs found in the Massachusetts markets during the year ending September 1, 1916. In addition will be found complete fodder analyses of many of the more important brands, also a special article entitled, "Net Weights of Feeding Stuffs." A tabulated list of the wholesale cost of feedstuffs for the year, based upon Boston rate, is also given.

Requests for bulletins should be addressed to the
AGRICULTURAL EXPERIMENT STATION,
AMHERST, MASS.

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

AMHERST, MASS.

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[1] On leave.

Department of Chemistry

J. B. LINDSEY, *Chemist.*

INSPECTION OF COMMERCIAL FEED STUFFS

By P. H. SMITH, *Chemist in Charge.**

INTRODUCTION.

The Massachusetts feeding stuff law requires that every package of commercial feeding stuff sold, offered or exposed for sale within this state,—with certain exceptions in the case of meals made directly from whole seeds,—be labeled with a statement showing the name of the manufacturer or party responsible for placing the product on the market, the net weight of the package, the minimum percentage of protein and of fat and the maximum percentage of fiber that the feeding stuff contains, and in addition in case of mixed or compounded feeds a list of the ingredients entering into their composition. Manufacturers must also register with the Experiment Station annually, or at least before placing on sale, feeding stuffs offered within the state. All registrations expire on September first of each year and must be renewed at that time. The guarantee is primarily a measure of protection for the consumer, while the registration is of great aid to the supervising official in keeping track of feeding stuffs offered and in preventing irregular or misleading guarantees before the product reaches the market.

The administration of the feeding stuffs law is in charge of the Director of the Experiment Station or his authorized deputy. The enforcement of the Act requires the services of an inspector who visits the places where feeding stuffs are found on sale in order to see if the requirements of the law are fully observed and to collect samples for analyses. The samples collected are sent to the Experiment Station where they are analyzed to determine if they are as represented. A feeding stuffs bulletin is published annually giving the results of the year's work together with such additional comment and data as may seem warranted. Penalties for violation of the Act are provided.

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*The inspection and collection of samples were carried out by Mr. J. T. Howard. The analyses of the samples were made by the writer assisted by Messrs. C. L. Beals, N. H. Borden and C. W. Davis.

Meaning of the Guarantee.

The guarantee does not imply that all feeding stuffs upon which guarantees are placed are desirable or economical, but it is simply a statement that will enable the consumer to purchase wisely if he wishes to follow good feeding practice. Under New England conditions the continued increase in the price of all commercial feed stuffs is no small factor in the increased cost of the production of milk and the maintenance of livestock in general and the feeder who purchases such material *in an indiscriminate manner without regard to composition or ingredients cannot expect to do business at a profit.*

Samples collected and analyzed.

During the year ending September 1, 1916, 1109 samples of feeding stuffs were collected at 170 different places of business. These samples have been analyzed and the results published in this bulletin. Thirteen hundred and thirty-six brands of feeding stuffs have been registered and permits for sale issued.

There have been no local prosecutions but in several instances samples of interstate shipments have been properly taken and forwarded to the Bureau of Chemistry at Washington for examination and prosecution if the evidence warranted.

The tabulation of partial analyses (protein, fat and fiber) follow. Owing to the demand for the complete analyses of some of the principal feeding stuffs, this publication also contains tables giving such data. Material of local interest, mixed and sold by the retailer, has not been included. It is believed that the feeder will be repaid by a careful study of these data. Information in addition to that contained in the feed bulletins will be cheerfullly furnished at all times.

CHEMICAL ANALYSIS OF FEEDSTUFFS.

1915-1916 [*Fall and Winter.*]

I Protein Feeds.

COTTONSEED MEAL.

Definitions. *COTTONSEED MEAL is the ground residue obtained in the extraction of oil from the cottonseed kernel.

CHOICE cottonseed meal contains at least 41 per cent protein.

PRIME cottonseed meal contains from 38.5 to 41 per cent protein.

GOOD cottonseed meal contains from 36 to 38.5 per cent protein.

COTTONSEED FEED is a mixture of cottonseed meal and cottonseed hulls containing less than 36 per cent protein.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Choice							
Bowen & Murphy, Birmingham, Ala.							
H. C. Bowen & Son	Cheshire	42.38	41.00	7.59	6.50	8.53	10.00
F. W. Brode & Co., Memphis, Tenn.							
Owl. . . . G. W. King	Charlton	44.00	41.00	7.03	6.00	7.81	10.00
Owl. . . . C. A. Pierce	Hinsdale	41.77	41.00	7.66	6.00	9.07	10.00
Owl. . . . Dresser Hull Co.	Lee	45.44	41.00	10.01	6.00	7.22	10.00
Owl. . . . Glen Mills Cereal Co.	Rowley	46.05	41.00	7.03	6.00	7.05	10.00
Owl. . . . Taunton Grain Co.	Taunton	41.03	41.00	8.00	6.00	8.55	10.00
Empire Cotton Oil Co., Atlanta, Ga.							
Gilt Edge, . . . G. F. Green Coal Co.	Campello	42.82	38.62	8.49	6.00	8.82	12.00
Humphreys-Godwin Co., Memphis, Tenn.							
Forfat, . . . W. N. Potter Grain Co	Hubbardston	41.12	38.62	8.14	6.00	8.12	12.00
Dixie, . . . F. Diehl & Son	Wellesley	42.60	38.62	8.93	6.00	8.75	12.00
J. M. MacDonald, Cincinnati, Ohio							
Kineda, . . . W. G. Horton	Ipswich	41.24	38.60	8.02	6.00	9.15	12.00
Kineda, . . . Stanley Grain Co	Lawrence	41.07	38.60	7.53	6.00	9.03	12.00
Macado, . . . F. A. Fales & Co	Norwood	42.82	41.00	5.97	6.00	8.50	12.00
Memphis Cot. Products Co., Memphis, Tenn.							
Selden, . . . Warren Grain Co.	Warren	42.43	41.00	8.33	6.00	9.66	10.00
Meridian Grain & Elv. Co., Meridian, Miss.							
Tip Top, . . . Millbury Grain Co.	Millbury	42.91	38.62	8.07	6.50	7.91	10.00
Tip Top, . . . J. B. Garland & Son	Worcester	42.56	38.62	7.92	6.50	7.80	10.00
C. L. Montgomery & Co., Memphis, Tenn.							
Canary, . . . F. A. Fair	Holliston	42.47	41.00	9.69	6.00	7.93	10.00
J. E. Soper Co., Boston, Mass.							
Pilgrim . . . W. J. Meek	Fall River	42.38	38.50	6.51	5.00	9.32	10.00
Pioneer, . . . A. Dodge & Sons	Beverly	41.86	41.00	7.87	7.00	9.24	10.00
Prime.							
Buckeye Cotton Oil Co., Cincinnati, Ohio							
Buckeye, . . . Pierce & Winn	Arlington	39.58	38.62	7.61	6.00	10.06	12.00
Buckeye, . . . Bond Grain Co.	Charlton	40.02	38.62	6.34	6.00	10.70	12.00
Buckeye, . . . J. A. Griffeth	Gt. Barrington	40.81	38.62	7.40	6.00	10.43	12.00
Buckeye, . . . Bowen & Fuller	Leominster	39.28	38.62	7.21	6.00	10.95	12.00
Buckeye, . . . J. W. Doon & Son	Natick	39.49	38.62	6.32	6.00	11.15	12.00
Buckeye, . . . J. Cushing & Co.	New Bedford	38.61	38.62	6.53	6.00	11.88	12.00
Buckeye, . . . I. J. Rowell	Pepperell	39.67	38.62	6.30	6.00	11.04	12.00
Buckeye, . . . A. Milot & Son	Taunton	39.14	38.62	6.04	6.00	11.78	12.00
Empire Cotton Oil Co., Atlanta, Ga.							
Gilt Edge, . . . Eastern Grain Co.	Bridgewater	40.94	38.00	6.47	6.00	10.23	12.00
Gilt Edge, . . . Butman & Cressey	Lynn	39.31	38.00	6.75	6.00	11.28	12.00
Humphreys-Godwin Co., Memphis, Tenn.							
Bull, . . . Cutler Co.	W. Brookfield	40.37	41.00	6.63	6.00	8.21	10.00
Dixie, . . . W. C. Brett	N. Abington	39.67	38.62	8.66	6.00	8.01	12.00
Dixie, . . . C. O. Parmenter	S. Sudbury	39.58	38.62	6.59	6.00	10.29	12.00
Forfat, . . . Whitman Coal & Grain Co.	Whitman	39.76	38.62	6.53	6.00	10.47	12.00

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*Definitions used in connection with these tables merely indicate our basis for classification. In so far as possible, they are based on trade usage and are subject to future change and revision.

COTTONSEED MEAL—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar	Fund	Guar	Found	Guar.
		%	%	%	%	%	%
Lanier Bros., Nashville, Tenn.							
Jersey,.........Foster Grain Co..........	Lowell........	40.02	38.62	7.78	6.00	9.71	10.00
Jersey,.........Geo. Nichols....	Rehoboth......	39.28	38.62	6.73	6.00	10.78	10.00
Jersey,.........A. Milot & Son............	Taunton.....	39.19	38.62	6.77	6.00	10.73	10.00
J. M. MacDonald, Cincinnati, Ohio							
Macado,.......W. E. Bryant & Co.... ...	Brockton.... ..	40.46	41.00	6.36	6.00	11.13	12.00
Memphis Cot. Products Co., Memphis, Tenn.							
Selden,.........City Grain Co...........	Marlboro.... ...	39.81	41.00	7.64	6.00	10.75	10.00
C. L. Montgomery & Co., Memphis, Tenn.							
Canary,........Cutler Co.................	N. Wilbraham...	38.49	38.63	7.30	6.00	10.98	10.00
Canary,........G. H. Reed................	S. Acton........	39.10	38.63	6.26	6.00	11.45	10.00
W. C. Nothern, Little Rock, Ark.							
Bee,...........M. H. Rolfe Est....... ...	Newburyport....	40.89	41.00	6.41	6.00	11.33	10.00
W. Newton Smith, Baltimore, Md.							
Dirigo, ...Rollstone Grain Co.........	Fitchburg.......	40.77	41.00	6.91	7.00	10.71	10.50
Dirigo,.........Ropes Bros................	Salem...........	40.37	41.00	8.20	7.00	8.98	10.50
J. E. Soper Co., Boston, Mass.							
Pilgrim,........N. Paquin & Sons..........	Fall River.......	39.58	38.50	6.05	5.00	11.03	10.00
Pilgrim,........H. G. Hill Co.............	Williamsburg....	38.96	38.50	7.19	5.00	10.62	10.00
Pioneer,........W. B. Herrick.............	Beverly.........	40.28	41.00	6.45	7.00	11.16	10.00
Pioneer,........A. Dodge & Sons Corp......	Beverly.........	40.28	41.00	6.30	7.00	10.91	10.00
Pioneer,........F. F. Woodward Co........	Fitchburg......	40.11	41.00	6.52	7.00	10.88	10.00
Union Seed & Fertilizer Co., New York, N. Y.							
Red Tag,.......Hoosac Val. Coal & Gr. Co..	Adams..........	39.05	38.55	8.07	7.00	9.59	11.50
Good.							
M. F. Baringer, Philadelphia, Pa.							
M. F. B........Prentiss Brooks & Co.......	Easthampton....	38.00	38.62	8.29	6.00	7.72	12.00
F. W. Brode & Co., Memphis, Tenn.							
Dove,..........Bond Grain Co............	Charlton........	38.44	38.63	8.55	6.00	10.75	10.00
Buckeye Cotton Oil Co., Cincinnati, Ohio							
Buckeye, ...Prentiss Brooks & Co.......	Holyoke.........	37.30	38.62	6.38	6.00	11.20	12.00
Buckeye,.......J. Cushing & Co...........	Leominster......	38.00	38.62	6.35	6.00	12.09	12.00
Buckeye,.......Plummer & Jennings Gr Co..	New Bedford....	37.65	38.62	6.65	6.00	12.13	12.00
C. L. Campbell & Co., Little Rock, Ark.							
Camel,.........I. J. Rowell...............	Pepperell........	37.74	38.50	7.02	6.00	11.14	12.00
Humphreys-Godwin Co., Memphis, Tenn.							
Dixie,..........J. H. Nye,...	Brockton........	38.18	38.62	8.08	6.00	12.18	12.00
Dixie,..........H. C. Bowen & Son........	Cheshire........	37.48	38.62	6.44	6.00	12.30	12.00
Dixie, ... W. W. Holmes.............	Webster.........	37.74	38.62	6.87	6.00	13.93	12.00
Forfat,.........Hingham Grain Co.........	Hingham.........	36.51	38.62	8.06	6.00	12.66	12.00
Forfat,.........Cunningham Grain Co.....	Malden.........	37.04	33.62	6.44	6.00	11.42	12.00
Forfat, ...Horvitz Grain Co........	New Bedford....	37.09	38.62	7.02	6.00	12.58	12.00
Forfat,.........G. R. Doane...............	N. Brookfield....	37.39	38.62	5.70	6.00	12.76	12.00
J. M. MacDonald, Cincinnati, Ohio							
Kineda,........Lexington Grain Co........	Lexington.......	37.74	38.60	6.84	6.00	12.40	12.00
C. L. Montgomery & Co., Memphis, Tenn.							
Canary,........G. F. Wetherbee Co.......	Gardner.........	37.74	38.63	6.12	6.00	12.71	12.00
W. Newton Smith, Baltimore. Md.							
Baltimore,......Ropes Bros...............	Danvers.........	37.04	38.62	6.36	7.00	12.93	10.00
J. E. Soper Co., Boston, Mass.							
Pilgrim, ... W. J. Meek....	Fall River.......	37.91	38.50	6.15	5.00	12.14	10.00
Pilgrim,..... . MacKenzie & Winslow......	Fall River.......	37.39	38.50	6.42	5.00	12.93	10.00
Union Brokerage & Commission Co., New Orleans, La.							
Magnolia,......W. E. Bryant & Co..........	Brockton,.......	38.09	38.62	6.83	7.50	11.68	10.00

COTTONSEED MEAL—*(Continued)*

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar	Found	Guar.
		%	%	%	%	%	%
Good (Continued)							
Union Seed & Fertilizer Co., New York							
Red Tag, ...J. E. Merrick & Co	Amherst........	36.91	38.55	6.83	7.00	10.71	11.50
Red Tag, ...A. F. Sanctuary	Amherst........	36.34	38.55	6.33	7.00	12.23	11.50
Red Tag, ...W. Lord	Athol	37.00	38.55	6.48	7.00	12.14	11.50
Red Tag, ...Cutler Grain Co	S Framingham ..	38.26	38.55	8.16	7.00	10.33	11.50
Red Tag, ...C. L. Marsh...............	Webster	33.00	38.55	6.50	7.00	10.44	11.50
Cottonseed Feed.							
Buckeye Cotton Oil Co., Cincinnati, Ohio							
Buckeye‡,......W. G. Horton	Ipswich.........	35.81	38.62	6.28	6.00	12.87	12.00
Empire Cotton Oil Co., Atlanta, Ga.							
Gilt Edge,‡.....P. W. Eaton & Co..........	Williamstown....	34.90	38.62	6.13	6.00	12.71	12.00
Humphreys-Godwin Co., Memphis, Tenn.							
Dixie,‡.........Prentiss Brooks & Co.......	Easthampton ...	35.73	38.62	5.94	6.00	13.87	12.00
Dixie,‡.........H. P. Howland	Spencer.........	34.85	38.62	6.89	6.00	12.52	12.00
Dixie,‡.........Hingham Grain Mill Inc.....	Hingham	34.10	38.62	8.71	6.00	13.55	12.00
"77" ....Ropes Bros................	Danvers	20.49	20.00	6.95	4.00	22.92	28.00
C. L. Montgomery & Co., Memphis, Tenn.							
Canary,* ‡.....W. B. Herrick.	Beverly.........	34.11	38.63	7.51	6.00	12.89	12.00
Canary,* ‡.....A. P. Ames & Co	Peabody........	34.94	38.63	7.35	6.00	11.24	12.00
Canary, ‡.....Cutler Co.	W. Brookfield ..	33.80	38.63	5.44	6.00	14.60	12.00
J. E. Soper Co., Boston, Mass.							
Pilgrim,........J. B. Bridges & Co.........	S. Deerfield	34.02	38.50	7.56	5.00	13.85	10.00

LINSEED MEAL.

Definition. Linseed Meal is the ground residue obtained in the extraction of oil from flaxseed.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar	Found	Guar.
New Process.							
American Linseed Co., New York							
Cleveland Flax Meal, Ropes Bros.	Salem	38.66	36.00	3.27	2.00	8.26	9.00
Cleveland Flax Meal, Ropes Bros.	Salem	37.74	36.00	3.63	2.00	8.06	9.00
Hypro, ...Plummer & Jennings Gr Co.	New Bedford....	33.44	36.00	2.97	2.00	8.45	9.00
Hypro, ...Ropes Bros...	Salem	33.70	36.00	2.63	2.00	8.77	9.00
Hypro, ...Record & Cote	New Bedford....	30.93	36.00	2.13	2.00	8.22	9.00
Hypro, ...MacKenzie & Winslow......	Fall River......	33.35	36.00	2.36	2.00	8.80	9.00
Hypro,.........Hingham Grain Mill Co.....	Hingham........	37.56	36.00	2.55	2.00	8.92	9.00
Hypro,.........F. F. Woodward Co..........	Fitchburg.......	35.46	36.00	2.87	2.00	8.83	9.00
J. B. Garland & Son.......	Worcester.......	37.83	36.00	2.33	2.00	8.73	9.00
M. J. Williams.............	Taunton........	30.23	36.00	3.02	2.00	7.95	9.00
J. I. White................	Boston.........	38.34	36.00	3.24	2.00	8.45	9.00
Old Process.							
American Linseed Co., New York							
J. H Nye.	Brockton.......	38.53	34.00	5.83	5.00	5.53	8.00
A. D Potter...............	Orange	34.50	34.00	8.23	5.00	7.70	8.00
P. W Eaton & Co..........	Williamstown....	34.46	34.00	7.26	5.00	7.63	8.00
J. Cushing & Co...........	Winchendon.....	34.50	34.00	6.33	5.00	7.86	8.00
American Milling Co., Peoria, Ill.							
A. M. C. O.... Cutler Grain Co............	So. Framingham	30.56	30.00	6.37	5.00	9.51	10.00
A. M. C. O.....H. H. Capen...............	Spencer.........	30.21	30.00	6.78	5.00	9.57	10.00
Engle, Ryan & Co., Buffalo, N. Y.							
Eastern Grain Co..........	Bridgewater.....	30.72	30.00	5.11	7.00	8.23	10.00
J. Cushing & Co...........	Fitchburg.......	29.81	30.00	5.63	7.00	8.63	10.00
Haverhill Milling Co........	Haverhill.......	30.12	30.00	5.43	7.00	9.55	10.00
J. Cushing & Co	Hudson.........	30.65	30.00	4.91	7.00	8.51	10.00
Cutler Grain Co............	S. Framingham	30.52	30.00	6.32	7.00	8.65	10.00
P. W Eaton & Co..........	Williamstown....	30.03	30.00	6.35	7.00	8.44	10.00

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*Both samples from same car. The car was refused by dealers and entire shipment returned to agent.

‡Misbranded Cottonseed Meal.

LINSEED MEAL—*(Continued)*

Manufacturer or Jobber, Brand and Retailer.	Sampled at·	Protein.		Fat		Fiber.	
		Found	Guar	Found	Guar.	Found	Guar..
		%	%	%	%	%	%
Kelloggs & Miller, Amsterdam, N. Y.							
Bond Grain Co.	Charlton	37.61	31.00	5.77	4.00	7.41	9.00
W. N. Potter Grain Co.	Princeton	37.74	31.00	5.72	4.00	7.60	9.00
W. N. Potter Grain Co.	Princeton	37.04	31.00	5.87	4.00	7.90	9.00
C. O. Parmenter	S. Sudbury	37.30	31.00	5.75	4.00	7.50	9.00
V. N. Potter & Sons, Greenfield, Mass.							
A. D. Potter	Orange	37.39	32.00	5.82	4.00	7.60	9.00
pencer, Kellogg & Sons, Buffalo, N. Y.							
M. E. Ballou & Son	Becket	36.25	33.00	6.12	5.00	7.75	10.00
G. F. Green Coal Co.	Campello	34.59	33.00	5.04	5.00	8.34	10.00
Robinson & Jones Co	Natick	34.41	33.00	5.77	5.00	7.72	10.00
Robinson & Jones Co.	Natick	35.64	33.00	6.05	5.00	7.98	10.00
M. G Williams	Raynham	36.33	33.00	5.80	5.00	7.48	10.00
J. B. Garland & Son	Worcester	35.29	33.00	5.85	5.00	7.93	10.00
oledo Seed and Oil Co., Toledo, Ohio							
N Paquin & Sons	Fall River	30.74	30.00	6.24	5.00	8.21	10.00
Hingham Grain Mill, Inc.	Hingham	32.23	30.00	6.63	5.00	8.88	10.00
H. K Webster Co.	Lawrence	30.38	30.00	6.80	5.00	8.51	10.00
F. A. Fales & Co	Norwood	34.90	30.00	5.20	5.00	7.62	10.00

MISCELLANEOUS OIL CAKE MEALS.

merican Hominy Co., Indianapolis, Ind.							
Homcoline,.....Ropes Bros	Danvers	19.92	17.00	6.55	5.00	5.43	7.00
Homcoline,.....G. F. Wetherbee Co.	Gardner	20.58	17.00	7.23	5.00	5.85	7.00
Homcoline,.....F. Diehl & Son	Wellesley	20.71	17.00	7.01	5.00	5.53	7.00
Homcoline,.....J. B. Garland & Son	Worcester	18.61	17.00	7.03	5.00	5.83	7.00
orn Products Refining Co., New York							
Argo Corn Oil Cake, J H. Nye	Brockton	24.56	20.00	6.81	9.00	8.93	10.00
Argo Corn Oil Cake, J H. Nye	Brockton	25.48	20.00	9.63	9.00	9.15	10.00
Argo Corn Oil Cake,. W. E. Bryant & Co.	Brockton	24.04	20.00	8.63	9.00	8.65	10.00
il Seeds Co., New York							
Cocoanut Oil Meal,.. A H. Wood & Co.	Framingham	22.07	20.00	13.27	7.00	9.12	10.00
Cocoanut Oil Meal,.. A. H. Wood & Co.	Framingham	23.91	20.00	10.92	7.00	10.03	10.00
Peanut Oil Meal, (Alpha) A. H. Wood & Co.	Framingham	48.74	40.00	7.41	7.00	4.20	5.00
Peanut Oil Meal, (Beta) ..A. H Wood & Co.	Framingham	35.03	30.00	10.03	7.00	8.01	8.00

GLUTEN MEAL.

Definition. Gluten Meal is a product obtained in the manufacture of starch and glucose from corn, and consists largely of the flinty portion of the kernel.

orn Products Refining Co., New York							
Diamond,*......W. F. Bryant & Co.	Brockton	44.48	40.00	1.49	1.50	1.49	4.00
Diamond,......Bond Grain Co.	Charlton	45.67	40.00	0.85	1.50	1.19	4.00
Diamond,......MacKenzie & Winslow.	Fall River	44.44	40.00	0.73	1.50	0.98	4.00
Diamond,..... W. J. Meek.	Fall River	46.14	40.00	1.48	1.50	1.60	4.00
Diamond,......W. J. Meek	Fall River.	45.88	40.00	2.00	1.50	1.44	4.00
Diamond,......W. N. Potter Grain Co.	Hubbardston	45.70	40.00	1.27	1.50	1.21	4.00
Diamond,......P. Foisy	New Bedford	43.87	40.00	2.03	1.50	1.33	4.00
Diamond,......Winslow & MacKenzie.	New Bedford	42.38	40.00	0.67	1.50	0.65	4.00
Diamond,......Morse Bros.	Southbridge	42.99	40.00	0.74	1.50	1.75	4.00
Diamond,......H C. Puffer Co.	Springfield	46.23	40.00	0.58	1.50	1.36	4.00
Diamond,......Taunton Grain Co.	Taunton	49.83	40.00	0.86	1.50	1.32	4.00

GLUTEN FEED.

Definition. Gluten Feed is a product obtained in the manufacture of starch and glucose from corn, and consist largely of the flinty portion of the kernel and corn bran.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar	Found	Guar	Found	Guar
		%	%	%	%	%	%
American Maize Products Co., New York City							
Crescent,........Bowen & Fuller............	Leominster......	25.79	24.00	2.01	2.00	6.72	8.5
Crescent,........C. O. Parmenter............	S. Sudbury......	25.83	24.00	1.63	2.00	6.93	8.5
Clinton Sugar Refining Co., Clinton, Iowa							
Clinton,........J. E. Merrick & Co.........	Amherst.......	26.49	23.00	4.15	3.00	7.66	8.
Clinton,........Ropes Bros...............	Danvers.......	25.83	23.00	3.12	3.00	6.13	8.
Clinton,........Stanley Grain Co...........	Lawrence.......	26.79	23.00	3.95	3.00	7.69	8.
Clinton,........Bowen & Fuller............	Leominster	28.54	23.00	3.10	3.00	6.54	8.
Clinton,........Foster Grain Co............	Lowell.......	27.19	23.00	3.85	3.00	6.70	8.
Corn Products Refining Co., New York							
Buffalo,........T. Steinhard...............	Chester.........	29.77	23.00	1.75	1.00	6.42	8.
Buffalo,........W. N. Potter Grain Co......	Gardner.........	28.72	23.00	2.30	1.00	6.49	8.
Buffalo,........W. N. Potter Grain Co......	Hubbaroston....	26.76	23.00	1.26	1.00	6.12	8.
Buffalo,........J. Franks.................	New Bedford....	27.67	23.00	2.87	1.00	5.95	8.
Buffalo,........F. W. Dorr Co............	Newton.........	27.06	23.00	2.40	1.00	7.32	8.
Buffalo,........Sparrow & Co.............	Northboro.......	28.54	23.00	2.30	1.00	4.03	8.
Buffalo,........Ropes Bros................	Salem..........	26.44	23.00	2.97	1.00	6.64	8.
Crescent,........A. F. Sanctuary..........	Amherst.........	26.00	23.00	3.53	1.00	7.53	8.
Crescent,........P. Foisy..................	New Bedford,....	28.19	23.00	2.00	1.00	6.10	8.
Crescent,........M. H. Rolfe Est...........	Newburyport....	24.30	23.00	5.23	1.00	6.45	8.
Globe,.........Scott Grain Co..............	Amesbury.......	28.28	23.00	1.31	1.00	7.20	8.
Globe,.........A. Dodge & Sons...........	Beverly.........	26.76	23.00	3.03	1.00	6.72	8.
Globe,.........A. Dodge & Sons...........	Beverly.........	28.51	23.00	2.19	1.00	5.93	8.
Douglas Co., Cedar Rapids, Iowa							
Douglas,.......J. Cushing & Co..........	Fitchburg......	23.56	23.00	3.71	1.00	7.47	8.
Douglas,.......H. W. Kimble..............	Westboro........	23.82	23.00	2.51	1.00	6.95	8.
Douglas,.......J. B. Garland & Son........	Worcester.......	23.99	23.00	2.21	1.00	6.71	8.
J. C. Hubinger Bros. Co., Keokuk, Iowa							
K. K. K.......Foster Grain Co............	Lowell..........	22.99	23.00	3.57	2.40	6.62	7.
K. K. K.......Weld & Beck...............	Southbridge.....	25.04	23.00	5.33	2.40	6.60	7.
A. E. Staley Manufacturing Co., Decatur, Ill.							
Staley's,.......C. S. Barber	Bernardston.....	26.53	23.00	2.63	2.50	6.27	12.
Staley's,.......P. W. Eaton & Co..........	Williamstown....	22.59	23.00	3.48	2.50	7.93	12.

DISTILLERS' DRIED GRAINS.

Definition. Distillers' Dried Grains are the dried residue obtained from cereals in the manufacture of alcohol a distilled liquors.

Ajax Milling & Feed Co., New York							
Ajax Flakes, ..C. S. Barber..............	Bernardston.....	30.65	30.00	9.85	11.00	8.98	14
Ajax Flakes, ..Eastern Grain Co..........	Bridgewater....	30.90	30.00	11.67	11.00	10.22	14
Ajax Flakes,....C. O. Parmenter..........	S. Sudbury......	33.45	30.00	10.38	11.00	12.74	14
Ajax Flakes,....G. Methe & Son...........	Springfield.......	33.89	30.00	10.91	11.00	11.98	14
Ajax Flakes,....J. Cushing & Co...........	Winchendon....	33.71	30.00	10.42	11.00	12.07	14
Continental Cereal Co., Peoria, Ill.							
Continental,....W. N. Potters Sons & Co....	Hadley.........	27.67	29.00	8.21	10.00	7.30	10
Continental,....Potter Grain Co............	Shelburne Falls..	29.82	29.00	7.80	10.00	7.30	10
Continental,....E. C. Frost................	Shelburne Falls	26.79	29.00	8.80	10.00	6.95	10
Continental,....C. L. Beals & Co...........	Winchendon.....	28.19	29.00	7.90	10.00	6.76	10
Dewey Bros Co., Blanchester, Ohio							
Corn 3D,.......A. F Sanctuary............	Amherst.........	25.92	26.00	9.51	9.00	11.68	13
Corn 3D,.......Mansfield Coal & Grain Co..	Mansfield.......	32.31	26.00	12.97	9.00	10.00	13
Corn 3D,.......W. W. Holmes.............	Webster.........	26.67	26.00	9.48	9.00	12.34	13
Corn 3D.......C. L. Beals & Co...........	Winchendon.....	28.63	26.00	9.49	9.00	11.52	13
Corn 3D.......A. N. Whittemore & Co.	Worcester.......	29.16	26.00	10.70	9.00	12.17	13
Eagle 3D,......Sparrow & Co..............	Northboro.......	32.84	30.00	12.90	10.00	13.44	13
Eagle 3D.......H. C. Puffer Co............	Springfield.......	30.83	30.00	10.17	10.00	10.71	13
Eagle 3D,......J. B. Garland & Son........	Worcester.......	32.98	30.00	11.06	10.00	10.32	13
Grain Products Sales Co., Buffalo, N. Y.							
Columbia,......F. A. Fales Co.............	Norwood........	29.07	30.00	9.28	10.00	7.80	14
Ubiko Milling Co., Cincinnati, Ohio							
Fourex,........F. F. Woodward Co........	Fitchburg......	34.50	31.00	11.93	12.00	11.12	13
Fourex,........J. W. Doon & Son..........	Natick........	33.71	31.00	11.81	12.00	12.23	13

MALT SPROUTS.

Definition. Malt Sprouts consist of the dried sprouts of the barley grain removed after the process of malting.

Manufacturer or Jobber, Brand and Retailer.	Sampled at	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
American Malting Co., New York							
J. B. Garland & Son........	Worcester.	26.36	21.09	1.30	2.10	12.90	12.30
D. W. Ranlet Co., Boston, Mass.							
Ropes Bros................	Danvers..	27.23	23.00	0.97	1.00	11.15	—
C. W. Snyder & Co., Chicago, Ill.							
Klienco,........J. B. Bridges & Co.........	S. Deerfield..	26.71	20.00	1.18	2.00	12.40	16.00

BREWERS' DRIED GRAINS.

Definition. Brewers' Dried Grains are the dried residue obtained from cereals in the manufacture of malted liquors.

Manufacturer or Jobber, Brand and Retailer.	Sampled at	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.
Farmers Feed Co., New York							
Bull,...........A. Dodge & Sons Corp......	Beverly.......	31.44	27.20	6.70	6.30	11.49	15.20
Bull,...........E. C. Packard............	Brockton.....	26.58	27.20	[illegible]	[illegible]	12.98	15.20
Bull............H. K. Webster Co.........	Lawrence......	30.03	27.20	6.63	[illegible]	12.81	15.20
Bull,...........Bond Grain Co.............	Charlton........	31.96	27.00	7.19	6.30	12.51	15.20
Bull,...........A. D. Potter..............	Orange..........	30.12	27.20	[illegible]	6.30	[illegible]	15.20
Bull,...........Eastern Grain Co.,........	Bridgewater...	27.14	27.20	6.95	6.30	13.70	15.20
Bull,...........A. Dodge & Son Corp.......	Beverly........	26.97	27.20	6.66	6.30	13.36	15.20
Bull,...........Foster Grain Co...........	Lowell.......	31.00	27.20	7.60	6.30	12.39	15.20
Bull,...........Bond Grain Co.............	Charlton......	27.58	27.20	6.82	6.30	14.38	15.20
Bull,...........Lexington Grain Co........	Lexington....	30.65	27.20	[illegible]	6.30	14.31	15.20
Bull,...........J. N. Waite..	Easthampton.	28.54	27.20	6.95	6.30	13.47	15.20
Haffenreffer & Co., Boston, Mass.							
Ropes Bros................	Salem	24.45	25.00	5.58	6.00	12.08	13.00
Ropes Bros................	Salem	27.84	25.00	5.87	6.00	12.68	18.00
James Hanley Brewing Co., Providence, R. I.							
C. G. Jordan..............	Weymouth...	25.31	20.00	6.90	6.00	14.33	18.00
C. O. Parmenter...........	S. Sudbury......	24.52	20.00	7.05	6.00	16.68	18.00
Lexington Grain Co.	Lexington.......	25.22	20.00	[illegible]	6.00	15.28	18.00
Narragansett Brewing Co., Providence. R, I.							
Milford Grain Co..........	Milford.........	23.60	22.00	6.55	5.00	12.47	-
Providence Brewing Co., Providence, R. I.							
W. Livingston.............	Lowell........	28.59	22.00	7.13	5.00	14.20	15.00
F. A. Fales Co............	Norwood...	30.21	22.00	6.78	5.00	12.70	15.00
Weld & Beck...............	Southbridge...	32.49	22.00	6.69	5.00	12.79	15.00
Western Grain & Feed Co., Chicago, Ill.							
Stanley, Harlow, Hamlin,Inc	Boston	23.29	20.00	9.86	5.00	15.10	16.00

YEAST AND VINEGAR GRAINS.

Definitions. Dried grain residues from the manufacture of yeast or malt vinegar.

Manufacturer or Jobber, Brand and Retailer.	Sampled at	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.
leischmann Co., Peekskill, N. Y.							
Stanley, Harlow, Hamlin, Inc	Boston...... ...	20.40	19.00	7.77	7.00	17.27	19.00
Foster Grain Co	Lowell.........	19.44	19.00	6.22	7.00	18.84	19.00
Hottelet Co., Milwaukee, Wis.							
Onyx, ...Stanley, Harlow, Hamlin, Inc	Boston.........	19.88	19.00	5.90	7.00	17.61	19.00
Milwaukee Vinegar Co., Cudahy, Wis.							
M. V. C. O. ...Foster Grain Co	Lowell.........	20.28	21.00	8.83	5.00	17.02	12.90

RED DOG FLOUR.

Definition. Red Dog Flour is a low grade wheat flour containing the finer particles of bran.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar
		%	%	%	%	%	%
Atlas Flour Mills, Milwaukee, Wis.							
Atlas,.........I. J. Rowell	Pepperell	16.46	16.00	4.76	4.50	3.93	4
Hecker-Jones-Jewell Milling Co., Buffalo, N. Y.							
N. Adams Flour & Gr. Co.	N. Adams	17.51	16.75	5.28	4.50	2.53	5
C. L. Marsh	Webster	16.73	16.75	5.67	4.50	2.24	5
N'thw'st'rn. Cons'l. Mlg. Co., Minneapolis, Minn							
XXX Comet,... Potter Bros .& Co	N. Adams	20.43	16.50	4.40	4.00	2.53	3.
Pillsbury Flour Mills Co., Minneapolis, Minn.							
XX Daisy,......P. Foisy	New Bedford	19.26	17.00	4.30	4.50	2.15	4
XX Daisy......Potter Bros. & Co	N. Adams	18.48	17.00	4.21	4.50	2.40	4
XX Daisy,.....H. P. Howland	Spencer	16.93	17.00	4.40	4.50	2.10	4.
Russell-Miller Milling Co., Minneapolis, Minn.							
J. A Sullivan	Northampton	15.24	16.00	4.17	4.50	2.27	6.
Star & Cresent Milling Co., Chicago, Ill.							
Star,..........A. H. Wood & Co	Framingham	15.55	16.00	4.16	4.00	2.75	3.

WHEAT MIDDLINGS.

Definition. Wheat Middlings consist of the finer portions of the wheat kernel as separated from it in the man facture of flour. As there is no marked line of difference between flour and standard middlings both a placed under this heading.

Amendt Milling Co., Monroe, Mich.							
A. M. C. O.,....G. R. Doane	N. Brookfield	14.89	15.00	4.75	5.00	6.19	4
A. M. C. O.,....I. J. Rowell	Pepperell	17.16	15.00	4.78	5.00	5.91	4
A. M. C. O.,....C. L. Marsh	Webster	16.55	15.00	5.21	5.00	4.80	4.
Atlas Flour Mills, Milwaukee, Wis.							
*Atlas Flour,.... Foster Grain Co	Lowell	16.25	14.00	5.03	3.00	6.33	7
*Atlas Standard. A. Culver Co	Rockland	14.28	13.50	4.64	3.50	10.45	10
*Atlas Standard. P. W. Eaton & Co	Williamstown	14.32	13.50	4.78	3.50	11.02	10
Banner Milling Co., Buffalo, N. Y.							
*Banner Flour,.. A. E. Lawrence & Son	Ayer	15.68	15.00	5.33	4.25	4.93	9
*Banner Standard, Stanley Wood Grain Co.	Taunton	16.03	15.00	5.76	4.25	6.43	11.
Barber Milling Co., Minneapolis, Minn,							
Star,..........A. Dodge & Sons Corp	Beverly	16.81	14.00	5.58	4.00	5.79	10
Bay State Milling Co., Winona, Minn.							
*Winona,.......T. Steinhard	Chester	16.20	17.00	5.28	5.00	6.90	8.
A. H. Brown & Bros., Boston							
*Onward,.......Scott Grain Co	Amesbury	16.90	15.00	5.24	5.00	6.86	8
Chas. M. Cox Co., Boston							
Wirthmore,.....C. O. Parmenter	S. Sudbury	16.07	15.00	5.35	4.00	6.03	7
Wm. G. Crocker, Minneapolis, Minn.							
*Flour,.........J. B. Bridges & Co	S. Deerfield	15.59	17.00	5.86	5.00	5.40	6
J. G. Davis Co., Rochester, N. Y.							
Granite,........C. L. Marsh	Webster	16.99	15.00	6.77	4.50	5.10	10.
Duluth-Superior Milling Co., Duluth, Minn.							
*.............C. L. Marsh	Webster	16.60	16.50	5.60	4.75	5.32	7.
Eagle Roller Mill Co., New Ulm, Minn.							
*.............N. Adams Flour & Gr. Co.	Adams	14.89	15.45	5.02	4.53	6.42	9

*With Screenings.

WHEAT MIDDLINGS.—*(Continued)*

Manufacturer or Jobber. Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar	Found	Guar
		%	%	%	%	%	%
Federal Milling Co., Lockport N. Y.							
*Lucky Flour, . A. Milot & Son.	Taunton	17.39	14.00	5.73	3.50	6.33	10.00
Gardner Mills, Hastings, Minn.							
*Standard, A F Sanctuary	Amherst	16.64	15.90	7.51	4.50	9.15	10.00
*Standard, Dresser Hall Co.	Lee	15.60	15.90	6.38	4.50	8.88	10.00
Wm. Hamilton & Son., Honeye Falls, N. Y.							
Warren Grain Co.	Warren	14.80	16.20	3.28	4.75	2.75	4.25
Hecker-Jones-Jewell Mill. Co., Buffalo, N. Y.							
* Stanley Harlow, Hamlin Inc.	Boston	17.48	16.50	6.08	6.00	7.69	8.50
* M. G. Williams	Taunton	17.48	16.50	5.23	6.00	7.15	8.50
* C. L. Beals & Co.	Winchendon	17.25	16.50	6.54	6.00	7.88	8.50
* C. L. Marsh	Webster	16.81	16.50	6.68	6.00	8.45	8.50
Kehlor Flour Mills Co., St. Louis, Mo.							
*Rex, A. Culver Co.	Rockland	19.13	16.00	5.08	4.00	6.13	7.00
Kemper Mill & Elev. Co., Kansas City, Mo.							
*Carnation, E. J. Adams	Gt. Barrington	17.74	16.00	4.02	4.30	4.97	6.00
*Carnation, E. J. Adams	Gt. Barrington	16.73	16.00	3.64	4.30	5.63	6.00
*Crescent, John Shea	Lawrence	17.56	16.00	4.06	4.25	6.67	8.00
Listman Mill Co., LaCrosse, Wis.							
Illinco Standard, Foster Grain Co.	Lowell	16.81	18.18	5.84	5.57	6.59	10.00
Mansfield Milling Co., Mansfield, Ohio							
*Triangle, E. A. Cole	Housatonic	18.04	13.00	5.05	4.00	4.82	13.00
Maple Leaf Milling Co., Toronto, Canada							
*Fancy Canadian, J. O. Ellison & Co.	Haverhill	16.46	16.00	5.65	5.50	8.77	10.00
*Fancy Canadian, Dresser Hull Co.	Lee	15.76	16.00	5.63	5.50	9.15	10.00
*Fancy Canadian, Taunton Grain Co.	Taunton	16.29	16.00	5.57	5.50	7.05	10.00
*Rex, H. W. Kimball	Westboro	17.16	16.00	5.67	5.50	6.83	10.00
New Prague Flour Mill Co., New Prague, Minn.							
Low Grade Flour, Hoosac Val. Coal & Gr.Co	Adams	15.50	16.00	3.41	3.50	0.77	1.50
Seal of Minnesota, H. P. Howland	Spencer	16.81	16.30	5.91	5.70	5.15	6.50
Niagara Falls Milling Co., Niagara Falls, N. Y.							
Foster Grain Co.	Lowell	16.03	16.00	5.97	4.00	7.46	11.00
N'thw'st'rn Colsol. Mlg. Co., Minneapolis, Minn.							
*Flour, W. N. Potter Grain Co.	Princeton	16.29	15.50	6.19	4.50	6.47	6.00
XXX Comet Flr Mansfield Milling Co.	Mansfield	18.48	16.50	5.50	4.00	1.69	3.00
*Standard Bond Grain Co.	Charlton	15.94	15.00	6.63	4.50	8.89	11.00
*Standard, A. H. Wood & Co.	Framingham	16.08	15.00	5.20	4.50	10.04	11.00
Ogilvie Flour Mills Co., Winnipeg, Canada							
* Eastern Grain Co.	Bridgewater	16.25	15.00	5.74	5.00	7.68	8.00
* C. P. Washburn	Middleboro	17.30	15.00	5.75	5.00	8.23	8.00
* Knight Grain Co.	Newburyport	16.03	15.00	5.38	5.00	9.06	8.00
Pillsbury Flour Mills Co., Minneapolis, Minn.							
*A. C. A Pierce	Hinsdale	15.33	15.00	4.52	4.00	3.89	8.00
*A. F. A Fales Co.	Norwood	16.55	15.00	5.25	4.00	5.40	8.00
*B. C. F Pease	Chester	19.20	15.00	6.51	4.50	8.73	10.00
*B. Cutler Grain Co.	S. Framingham	17.30	15.00	5.12	4.50	9.50	10.00
*Durum Wheat, Hingham Grain Mill Inc.	Hingham	12.87	12.50	6.20	4.00	11.75	11.00
Quaker Oats Co., Chicago, Ill.							
Bell Cow, Pierce & Winn.	Arlington	17.95	15.30	6.14	5.50	5.96	7.60
Bell Cow, MacKenzie & Winslow.	Fall River	17.25	15.30	5.41	5.50	6.53	7.60
Bell Cow, Highland Mills,	Newton Hi'lands	16.73	15.30	5.38	5.50	6.34	7.60
Russell-Miller Milling Co., Minneapolis, Minn.							
Flour, Prentiss Brooks & Co.	Easthampton	15.24	16.00	4.45	5.00	2.71	6.00
Flour, Prentiss Brooks & Co.	Easthampton	18.04	16.00	5.53	5.00	4.12	6.00
Flour, I. B. Bridges & Co.	S. Deerfield	17.34	16.00	6.23	5.00	2.44	6.00
Standard, A Dodge & Sons Corp.	Beverly	16.81	15.00	5.31	4.00	7.48	9.00
Standard, J. A. Sulivan.	Northampton	15.15	15.00	5.71	4.60	8.62	9.00

*With Screenings

WHEAT MIDDLINGS—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar..
		%	%	%	%	%	%
Sheffield-King Milling Co., Minneapolis, Minn.							
*Fairybow, W. G. Horton	Ipswich	15 99	17.15	5.10	5.01	7.83	8.9
Sleepy Eye Flour Mills Co., Minneapolis, Minn.							
*White, Bond Grain Co.	Charlton	16.08	16.50	5.01	4.50	7.05	9.5
David Stott Flour Mills, Detroit, Mich.							
White, W. Lord	Athol	14.54	15.00	4.46	4.50	3.17	6.0
*Pennant, W. Lord	Athol	17.60	17.00	4.64	5.00	6.55	7.0
*Pennant, W. Lord	Athol	15.15	17.00	5.08	5.00	4.76	7.0
*Pennant, Stanley Grain Co.	Lawrence	17.04	17.00	4.86	5.00	5.48	7.0
Thompson Milling Co., Lockport, N. Y.							
Angelus, J. W. Doon & Son	Natick	13.54	13.00	5.07	4.00	7.55	13.0
Geo. Urban Milling Co., Buffalo, N. Y.							
* P. Feisy	New Bedford	17.78	16.00	5.97	4.50	6.40	9.5
Washburn Crosby Co., Minneapolis, Minn.							
*Flour, T. Steinhard	Chester	17.69	17.00	5.78	5.00	5.26	6.5
*Standard, Millbury Grain Co.	Millbury	15.50	15.00	6.14	5.00	7.68	9.5
*Standard Winslow & MacKenzie Co.	New Bedford	17.74	15.00	6.03	5.00	7.20	9.5
*Standard, G. R. Doane	N. Brookfield	16.81	15.00	5.18	5.00	8.61	9.5

WHEAT MIXED FEEDS.

Definition. Wheat Mixed Feed is a mixture of the products other than flour obtained from the milling of the whea kernel.

Acme-Evans Co., Indianapolis, Ind.							
*Acme, A. H. Wood & Co.	Framingham	17.51	16.00	4.28	4.00	7.75	9.0
*Acme, A. H. Wood & Co.	Framingham	16.81	16.00	4.23	4.00	8.06	9.0
Amendt Milling Co., Monroe, Mich.							
A. M. C. O., G. R. Doane	N. Brookfield	16.29	15.00	5.46	4.00	7.08	8.0
A. M. C. O., I. J. Rowell	Pepperell	15.59	15.00	4.46	4.00	6.37	8.0
A. M. C. O., Rollstone Grain Co.	Fitchburg	14.89	15.00	5.27	4.00	7.93	8.0
A. M. C. O., C. L. Marsh	Webster	15.24	15.00	5.02	4.00	7.10	8.0
A. M. C. O., C. L. Marsh	Webster	16.90	15.00	4.65	4.00	7.75	8.0
E. W. Bailey & Co., Montpelier, Vermont							
J. E. Merrick & Co.	Amherst	16.25	16 00	4.64	3.75	7.83	8.5
J. E. Merrick & Co.	Amherst	15.15	16.00	4.25	3.75	7.37	8.5
Banner Milling Co., Buffalo, N. Y.							
*Banner, G. F. Green Coal Co.	Campello	15.15	15.00	5.58	4.25	7.90	11.7
*Banner, Jaquith & Co.	Woburn	15.33	15.00	5.63	4.25	8.68	11.7
Blish Milling Co., Seymour, Ind.							
Bull's Eye. Plummer & Jennings Gr. Co.	New Bedford	15.85	16.00	4.33	4.40	7.70	9.1
Wm. C. Brett, N. Abington, Mass.							
All Right, Wm. C. Brett	N. Abington	14.63	16.00	5.28	4.00	7.89	7.0
Chas. M. Cox Co., Boston, Mass.							
*Wirthmore, Eastern Grain Co.	Bridgewater	14.51	16.00	4.71	4.00	7.52	7.0
*Wirthmore, J. H. Nye	Brockton	13.66	16.00	4.82	4.00	8.04	7.0
*Wirthmore, E. C. Packard	Brockton	16.20	16.00	4.67	4.00	6.80	7.0
*Wirthmore, Howe Bros.	Gardner	16.73	16.00	4.46	4.00	7.38	7.0
*Wirthmore, Robinson & Jones	Natick	14.45	16.00	5.30	4.00	7.82	7.0
*Wirthmore, Stanley Wood Grain Co.	Taunton	14.89	16 00	4.88	4.00	7.19	7.0
*Wirthmore, C. G. Jordan,	Weymouth	14 63	16.00	5 10	4.00	7.69	7.0
*Wirthmore, C. G. Jordan	Weymouth	16.86	16.00	4.30	4.00	6.45	7.0
*Wirthmore, Whitman Coal & Grain Co.	Whitman	16.25	16.00	3.94	4.00	7.02	7.0

*With Screenings.

WHEAT MIXED FEEDS—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Duluth-Superior Milling Co., Duluth, Minn.							
*Boston,.......Scott Grain Co............	Amesbury.......	15.59	15.00	5.25	4.25	7.86	9.75
*Boston,.......J. N. Waite..............	Easthampton....	16.11	15.00	5.22	4.25	7.99	9.75
*Boston,.......A. D. Potter..............	Orange.........	14.63	15.00	5.32	4.25	7.79	9.75
*Boston,.......Ropes Bros...............	Salem..........	15.15	15.00	5.47	4.25	7.94	9.75
*Boston,.......G. H. Reed:...............	S. Acton.......	15.76	15.00	4.64	4.25	7.61	9.75
*Boston,.......C. B. Sawin & Son.........	Southboro......	15.29	15.00	5.39	4.25	8.05	9.75
*Boston,.......Morse Bros................	Southbridge.....	14.98	15.00	5.72	4.25	8.15	9.75
*Boston,.......Sprague & Williams........	S. Framingham..	15.41	15.00	6.02	4.25	8.18	9.75
*Boston,.......Sprague & Wiliams.........	S. Framingham..	16.34	15.00	5.10	4.25	8.78	9.75
*Boston,.......C. L. Marsh...............	Webster........	15.76	15.00	5.30	4.25	7.12	9.75
*Boston,.......H. G. Hill Co.............	Williamsburg....	15.81	15.00	4.77	4.25	6.55	9.75
Everett, Aughenbaugh & Co., Waseca, Minn.							
*E. A. C. O.,....MacKenzie & Winslow......	Fall River...	18.13	15.00	5.58	3.00	7.10	12.00
*E. A. C. O.,....H. W. Kimball............	Westboro......	16.11	15.00	5.93	3.00	8.14	12.00
Garland Milling Co., Greensburg, Ind.							
*Garland,......Ropes Bros................	Danvers........	16.86	15.25	4.52	3.75	7.35	9.00
J. B. Garland & Son, Worcester, Mass.							
*Royal Worcester, [illegible] Grain Co..........	Charlton...	16.03	16.00	4.88	4.50	5.91	7.00
*Royal Worcester, J. B. Garland & Son......	Worcester.......	15.85	16.00	4.85	4.50	7.45	7.00
*Royal Worcester, J. B. Garland & Son...	Worcester.....	15.06	16.00	5.21	4.50	7.94	7.00
Glenn Mills Cereal Co., Rowley, Mass.							
Glenn Mills Cereal Co......	Rowley.........	14.80	16.00	4.19	4.00	6.85	—
Glenn Mills Cereal Co.......	Rowley..	13.58	16.00	4.03	4.00	8.57	—
Glen Ullin Roller Mills, Glen Ullin, N. Dak.							
Bran & Shorts,..G. R. Doane...............	N. Brookfield....	13.84	16.00	5.22	4.50	8.05	8.00
Grafton Roller Mills Co., Grafton, N. Dak.							
Imp. Grafton,...MacKenzie & Winslow......	Fall River.......	15.64	15.40	5.71	4.50	7.17	9.30
Imp. Grafton,...F. F. Woodward Co.........	Fitchburg.......	15.59	15.40	5.35	4.50	6.77	9.30
Imp. Grafton,...Mansfield Milling Co.......	Mansfield.......	15.64	15.40	5.43	4.50	6.65	9.30
Imp. Grafton,...J. Franks..................	S. Dartmouth....	15.50	15.40	5.71	4.50	6.89	9.30
Imp. Grafton,...J. B. Garland & Son........	Worcester.......	15.24	15.40	5.62	4.50	7.43	9.30
Hunter-Robinson-Wenz Milling Co., St. Louis, Mo.							
*Certified,......G. F. Wetherbee Co........	Gardner.........	17.95	15.50	6.95	4.00	6.60	10.00
*Certified,......Plummer & Jennings Gr. Co.	New Bedford....	16.51	15.50	4.82	4.00	7.49	10.00
*Certified,......Weld & Beck..............	Southbridge.....	17.25	15.50	4.39	4.00	6.82	10.00
*Certified,......A. Milot & Son............	Taunton........	17.60	15.50	4.69	4.00	7.38	10.00
*Sunshine,......MacKenzie & Winslow......	Fall River.......	16.69	15.50	5.55	4.00	7.35	10.00
*Sunshine,......N. Paquin & Son...........	Fall River......	16.73	15.50	4.33	4.00	7.65	10.00
*Matchless,.....Highland Mills.............	Newton Hi'lands	17.43	15.50	4.62	4.00	7.55	10.00
Kemper Mill & Elev. Co., Kansas City, Mo.							
*Crescent,......J. Cushing & Co..........	New Bedford....	17.08	16.00	4.13	4.00	8.55	10.00
*Crescent,......Knight Grain Co...........	Newburyport....	17.48	16.00	4.36	4.00	7.13	10.00
*Crescent,......F. W. Dorr Co.............	Newton Hi'lands	16.81	16.00	4.66	4.00	7.22	10.00
Lawrenceburg Roller Mills, Lawrenceburg, Ind.							
*Snowflake,.....J. Cushing & Co...........	New Bedford....	17.30	15.20	4.46	4.30	7.32	8.00
*Snowflake,.....Plummer & Jennings Gr. Co.	New Bedford....	16.38	15.20	4.47	4.30	7.15	8.00
*Snowflake,.....Wilder & Wotton...........	Lowell..........	17.74	15.20	4.30	4.30	7.51	8.00
*Snowflake,.....F. H. Crane & Sons........	Quincy Adams...	16.69	15.20	4.87	4.30	7.28	8.00
New England Flour Co., Boston, Mass.							
XXXX Hiawatha, H. P. Howland...........	Spencer.........	14.98	15.00	5.44	3.00	7.01	10.00
Noblesville Milling Co., Noblesville, Ind.							
* ....J. W. Doon & Son..........	Natick..........	17.21	16.00	4.36	4.00	7.18	8.00

*With Screenings

WHEAT MIXED FEEDS—*(Continued)*

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar	Found	Guar	Found	Guar.
		%	%	%	%	%	%
N'thw'stn. Consol. Mlg. Co., Minneapolis, Minn							
Planet..........C. S. Barber	Bernardston	18.30	15.00	5.17	4.00	5.49	8.00
Planet..........H. R. Lamb	Brookfield	18.03	15.00	5.22	4.00	6.20	8.00
Planet..........Bond Grain Co.	Charlton	15.85	15.00	5.11	4.00	6.20	8.00
Planet..........W. N. Potters Sons & Co.	Hadley	16.11	15.00	5.60	4.00	5.47	8.00
Planet..........W. N. Potters Sons & Co.	Hadley	15.99	15.00	5.72	4.00	7.33	8.00
Planet..........W. N. Potter Grain Co.	Princeton	16.90	15.00	5.01	4.00	3.82	8.00
Planet..........W. N. Potter Grain Co.	Princeton	18.26	15.00	5.03	4.00	5.85	8.00
Planet..........Potter Grain Co.	Shelburne Falls	16.11	15.00	5.38	4.00	5.62	8.00
Planet..........H. P. Howland	Spencer	15.94	15.00	5.62	4.00	5.71	8.00
Planet..........Geo. Methe & Son	Springfield	15.24	15.00	4.87	4.00	6.11	8.00
Pillsbury Flour Mills Co., Minneapolis, Ind.							
*Fancy,........W. E. Bryant & Co.	Brockton	15.06	16.00	4.85	4.50	6.66	9.00
*Fancy,........Brookfield Grain Co.	Brookfield	17.74	16.00	4.18	4.50	6.30	9.00
*Fancy,........C. F. Pease	Chester	15.50	16.00	4.96	4.50	6.48	9.00
*Fancy,........L. F. Whitaker	E. Longmeadow.	15.41	16.00	4.90	4.50	6.24	9.00
*Fancy,........C. A. Pierce	Hinsdale	15.68	16.00	4.75	4.50	5.54	9.00
*Fancy,........J. Cushing & Co.	New Bedford	15.06	16.00	4.36	4.50	6.38	9.00
*Fancy,........P. Foisy	New Bedford	17.69	16.00	4.75	4.50	6.40	9.00
*Fancy,........City Grain Co.	Marlboro	16.20	16.00	4.20	4.50	6.35	9.00
*Fancy,........I. J. Rowell	Pepperell	15.94	16.00	4.39	4.50	6.30	9.00
*Fancy,........I. J. Rowell	Pepperell	15.76	16.00	4.83	4.50	6.07	9.00
*Fancy,........H. W. Kimball	Westboro	15.33	16.00	5.09	4.50	6.16	9.00
Royal Milling Co., Great Falls, Montana.							
*Royal,........Ropes Bros.	Danvers	16.03	16.00	4.85	3.50	7.99	8.00
*Royal,........Knight Grain Co.	Newburyport	15.06	16.00	4.40	3.50	7.11	8.00
Rush City Milling Co., Rush City, Minn.							
Maxim,........M. H. Rolfe Est.	Newburyport	14.89	16.60	5.10	4.00	7.70	8.00
Maxim,........Weld & Beck	Southbridge	15.06	16.60	5.71	4.00	8.03	8.00
Russell-Miller Milling Co., Minneapolis, Minn.							
Occident,........Ralstone Grain Co.	Fitchburg	15.76	15.00	5.62	4.50	7.35	10.00
Occident,........E. J. Adams	Gt. Barrington	15.15	15.00	5.67	4.50	7.86	10.00
Occident,........J. Cushing & Co.	Leominster	16.38	15.00	5.97	4.50	7.80	10.00
Occident,........Mansfield Milling Co.	Mansfield	14.76	15.00	5.64	4.50	7.85	10.00
Occident,........Horvitz Grain Co.	New Bedford	15.90	15.00	5.87	4.50	7.83	10.00
Occident,........Plummer & Jennings Gr. Co.	New Bedford	16.99	15.00	5.27	4.50	7.58	10.00
Occident,........A. Culver Co.	Rockland	17.83	15.00	5.28	4.50	7.63	10.00
Occident,........E. C. Frost	Shelburne Falls	16.25	15.00	5.56	4.50	7.34	10.00
Sheffield-King Milling Co., Minneapolis, Minn.							
*Gold Mine,....Scott Grain Co.	Amesbury	16.03	15.90	4.78	4.90	8.07	8.98
*Gold Mine,....C. S. Barber	Bernardston	16.73	15.90	4.43	4.90	7.86	8.98
*Gold Mine,....W. E. Bryant & Co.	Brockton	16.69	15.90	4.75	4.90	8.10	8.98
*Gold Mine,....Bond Grain Co.	Charlton	15.06	15.90	5.22	4.90	8.27	8.98
*Gold Mine,....T. Steinhard	Chester	15.59	15.90	5.24	4.90	8.23	8.98
*Gold Mine,....W. G. Horton	Ipswich	15.64	15.90	4.94	4.90	7.35	8.98
*Gold Mine,....John Shea	Lawrence	17.08	15.90	4.95	4.90	8.15	8.98
*Gold Mine,....Plummer & Jennings Gr. Co.	New Bedford	20.54	15.90	5.00	4.90	8.05	8.98
*Gold Mine,....H. H. Capen	Spencer	15.50	15.90	5.67	4.90	8.05	8.98
*Gold Mine,....J. B. Garland & Son	Worcester	15.33	15.90	4.99	4.90	8.11	8.98
Sparks Milling Co., Alton, Ill.							
*Try Me,........George R. Parker	Davenport	17.34	16.00	4.43	3.50	7.28	8.00
*Try Me,........Bowen & Fuller	Leominster	17.16	16.00	4.41	3.50	7.37	8.00
*Try Me,........J. Cushing & Co.	Leominster	18.56	16.00	4.10	3.50	7.51	8.00
*Try Me,........C. H. Spring Co.	Newton Lwr. Fls	17.34	16.00	4.83	3.50	8.03	8.00
*Try Me,........C. B. Sawin & Son	Southboro	18.04	16.00	4.29	3.50	7.50	8.00
*Try Me,........J. B. Bridges & Co.	S. Deerfield	16.90	16.00	4.81	3.50	7.54	8.00
*Try Me,........Stanley Wood Grain Co.	Taunton	18.04	16.00	4.20	3.50	6.78	8.00
Sparks Milling Co., Terre Haute, Ind.							
*Wabash,........Wm. J. Meek	Fall River	16.55	14.00	4.08	3.50	6.00	11.00
*Wabash,........Horvitz Grain Co.	New Bedford	16.34	14.00	4.40	3.50	6.93	11.00
*Wabash,........Horvitz Grain Co.	New Bedford	16.38	14.00	4.44	3.50	7.55	11.00

*With Screenings

WHEAT MIXED FEEDS.—*(Continued)*

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
David Stott Flour Mills Co., Detroit, Mich.							
Honest,....... W. Lord.	Athol..........	14 89	15 50	4 82	4.50	7.70	8 00
Honest,........Milford Grain Co.........	Milford.........	15.76	15.50	4.22	4.50	7.12	8 00
Stratton & Co., Concord, N. H.							
W. Lord..................	Athol..........	15 50	14 00	4 37	4.00	6.76	9 00
Wm. Livingston...........	Lowell.........	13 93	14.00	4.14	4.00	6.30	9.00
Thompson Milling Co., Lockport, N. Y.							
Angelus,.......P. W. Eaton & Co.........	Williamstown....	14.28	13.00	4.71	4.00	5.89	14.00
Thornton & Chester Milling Co., Buffalo, N. Y.							
*T. & C.,.......A. D. Potter....	Orange.........	17.16	15.00	5.15	4 50	8 40	9 00
*T. & C.,.......W. N. Potter Grain Co.....	Princeton......	14 89	15 00	5 61	4 50	8.75	9 00
*T. & C........W. N Potter Grain Co.....	Princeton......	16 51	15.00	5.26	4.50	8.10	9.00
Waggoner-Gates Milling Co., Independence, Mo							
John Shea....	Lawrence........	18 21	15 00	4.69	3 00	7 02	9 00
J. B. Bridges & Co.........	S. Deerfield.....	18 39	15 00	4.25	3 00	6 91	9 00
A. Milot & Son............	Taunton.......	17.91	15.00	4.85	3.00	6.45	9.00
Washburn-Crosby Co., Minneapolis, Minn.							
* ....S. L Davenport & Son......	N. Grafton......	15 11	16 00	5.03	4 50	7.95	9 00
* ....Morse Bros................	Southbridge.....	14.80	16 00	5.12	4.50	8.14	9.00
H. K. Webster Co., Lawrence, Mass.							
*Blue Seal,.....H. K. Webster Co.........	Lawrence........	16.65	16.00	4.13	4.00	5.93	7.00
Williams Bros .Co., Kent, Ohio							
Kent,..........H. R. Lamb....	Brookfield......	15 33	12 00	4.71	2.00	5.65	15 00
Kent,..........Mansfield Coal & Grain Co. .	Mansfield.......	15 15	12 00	4 45	2.00	6 38	15 00
Kent,..........A. N. Whittemore & Co....	Worcester......	15.11	12 00	3 18	2 00	5 57	15 00
Kent,..........A. N. Whittemore & Co....	Worcester......	15 37	12.00	4 37	2.00	5.89	15.00

WHEAT BRAN.

Definition. Wheat bran is the coarse outer coating of the wheat kernel.

Ansted & Burk Co., Springfield, Ohio							
*William Tell, ..Knight Grain Co...........	Newburyport....	15.69	14.00	4.56	3.00	10.28	11.50
Ballard & Ballard Co., Louisville, Ky.							
Ballards,...... A. Culver Co..............	Rockland........	16.38	14.59	4.39	4.10	9.10	9.00
Banner Milling Co., Buffalo, N. Y.							
*Banner,.......J. H. Nye.................	Brockton........	17 48	15.00	4.40	4.25	9.70	9.75
*Banner,.......Jaquith & Co.............	Woburn.........	14 89	15.00	5.67	4.25	9.28	9.75
Bay State Milling Co., Winona, Minn.							
Winona,........A J. Richards & Son......	Weymouth......	14.19	15.00	5.59	5.00	10.48	11.00
Blake Milling Co., Edwardsville, Ill.							
* ....John J. White.............	Boston..........	15.94	15.50	3.99	4.00	8.85	11.00
A. H. Brown & Bros., Boston							
Onward,.......J. H. Nason & Co..........	Westboro........	13.75	15.00	5.23	5 00	10.37	11.00
Cataract City Milling Co., Niagara Falls, N. Y.							
* ....John J. White.............	Dorchester.....	14.80	14.00	5.25	4.80	8.80	12.00
Duluth Superior Milling Co., Duluth, Minn.							
*Duluth Imperial, John Franks............	New Bedford....	15.33	14.50	4.98	3.75	10.33	12.25
Eagle Roller Mills Co., New Ulm, Minn.							
* ....H C. Puffer Co...........	Springfield.......	14.28	15.45	4.90	3.43	10.34	11.50
B. A. Eckhardt Milling Co., Chicago, Ill.							
*.......... ..T. Steinhard	Chester.........	16.34	14 00	4.56	4.00	8.98	11.00

*With Screenings.

WHEAT BRAN.—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Federal Milling Co., Lockport, N. Y.							
*Lucky, A. Culver Co.	Rockland	16.20	13.00	4.58	2.50	9.26	14.00
*Lucky, A. Milot & Son	Taunton	16.20	13.00	4.62	2.50	7.65	14.00
Grafton Roller Mills Co., Grafton, N. Dak.							
J. J. White	Boston	14.63	15.80	5.38	4.00	9.59	11.90
Great Northern Flour Mills Co., Great Cloud, Minn.							
*Best of All, C. P. Washburn	Middleboro	13.58	14.50	5.05	4.00	10.63	12.00
Hecker-Jones-Jewell Mill. Co., Buffalo, N. Y.							
* Rollstone Grain Co.	Fitchburg	13.84	15.00	5.47	3.50	10.57	11.75
* Rollstone Grain Co.	Fitchburg	14.45	15.00	5.07	3.50	11.08	11.75
* G. F. Wetherbee Co.	Gardner	13.58	15.00	5.40	3.50	10.98	11.75
* M. G. Williams	Taunton	15.33	15.00	4.40	3.50	8.15	11.75
Hubbard Milling Mankato, Minn.							
J. B. Garland & Son	Worcester	14.63	14.80	6.37	3.00	9.60	12.50
Hunter-Robinson-Wenz Milling Co., St. Louis, Mo							
*Dreadnought, W. E. Bryant & Co.	Brockton	16.38	15.50	4.16	4.00	9.35	11.00
*Dreadnought, Ropes Bros	Danvers	17.60	15.50	4.53	4.00	9.00	11.00
*Dreadnought, H. K. Webster Co.	Lawrence	17.34	15.50	3.97	4.00	7.24	11.00
*Dreadnought, I. J. Rowell	Pepperell	17.12	15.50	4.13	4.00	9.71	11.00
Kehlor Flour Mills Co., St. Louis, Mo.							
Palace, J. Cushing & Co.	Leominster	17.12	14.50	4.18	4.00	9.43	10.00
Palace, C. B. Sawin & Son	Southboro	17.43	14.50	4.23	4.00	8.67	10.00
Kemper Mill & Elev. Co., Kansas City, Mo.							
*Anchor, J. A. Griffith	Gt. Barrington	17.39	14.50	4.31	4.00	8.90	10.00
*Anchor, W. G. Horton	Ipswich	16.81	14.50	4.20	4.00	9.17	10.00
*Anchor, C. P. Washburn	Middleboro	17.69	14.50	4.14	4.00	9.20	10.00
*Anchor, P. Foisy	New Bedford	17.39	14.50	4.93	4.00	9.05	10.00
*Anchor, Sprague & Williams	S. Framingham	17.39	14.50	4.79	4.00	9.20	10.00
LaGrange Mills, Red Wing, Minn.							
Winslow & Mackenzie Co.	New Bedford	14.36	14.00	5.24	3.00	10.19	12.60
Lawrenceburg Roller Mills, Lawrenceburg, Ind.							
Snow Flake, Plummer & Jennings Gr. Co.	New Bedford	15.41	14.50	3.85	3.80	10.05	9.50
Liberty Mills, Nashville, Tenn.							
*Liberty, Wm. J. Meek	Fall River	15.68	14.50	4.47	4.00	8.88	9.50
*Liberty, F. Diehl & Son	Wellesley	16.42	14.50	4.43	4.00	8.53	9.50
Maney Milling Co., Omaha, Neb.							
* A. F. Sanctuary	Amherst	15.85	14.00	3.99	4.25	8.60	10.50
* F. F. Woodward Co.	Fitchburg	15.94	14.00	4.54	4.25	9.25	10.50
* F. F. Woodward Co.	Fitchburg	16.55	14.00	4.22	4.25	9.71	10.50
Mansfield Milling Co., Mansfield, Ohio							
*Triangle, Knight Grain Co.	Newburyport	14.54	13.00	5.57	4.00	9.22	13.00
*Triangle, C. G. Jordan	Weymouth	17.47	13.00	4.55	4.00	9.45	13.00
Maple Leaf Milling Co., Toronto, Canada							
Maple Leaf, A. E. Lawrence & Son	Ayer	15.50	15.50	5.43	4.50	9.62	12.00
Maple Leaf, J. B. Bridges & Co.	S. Deerfield	15.33	15.50	5.53	4.50	9.98	12.00
Niagara Falls Milling Co., Buffalo, N. Y.							
Cutler Co.	W Brookfield	14.89	14.00	5.43	3.00	9.71	13.00
C. G. Jordan	Weymouth	16.46	14.00	5.07	3.00	9.35	13.00
N'thw'st'n. Consol. Mlg Co. Minneapolis, Minn.							
A. H. Wood & Co.	Framingham	15.55	14.50	4.52	4.00	10.51	11.00
W. N. Potters Sons & Co.	Hadley	13.93	14.50	5.04	4.00	9.96	11.00

*With Screenings.

WHEAT BRAN—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
Ogilvie Flour Mills Co., Winnepeg, Canada							
A. Culver Co.	Rockland	14.36	15.00	5.48	4.00	10.97	10.00
C. O. Parmenter Co.	S. Sudbury	15.24	15.00	5.71	4.00	10.25	10.00
Osakis Milling Co., Osakis, Minn.							
Osakis, Horvitz Grain Co.	New Bedford	13.84	15.00	5.40	4.00	10.24	11.00
Osakis, E. C. Frost	Shelburne Falls	14.71	15.00	5.56	4.00	10.43	11.00
Pillsbury Flour Mills Co., Minneapolis. Ninn.							
*Durum Wheat, Hoosac Val. Coal & Gr. Co.	Adams	12.17	11.00	6.25	4.00	13.81	14.00
* Beaver Coal & Grain Co.	Norwood	13.93	14.50	4.85	4.00	10.53	12.00
* Sprague & Williams	S. Framingham	15.94	14.50	4.93	4.00	10.61	12.00
Quaker Oats Co., Chicago, Ill.							
*Bell Cow, MacKenzie & Winslow	Fall River	15.59	15.30	5.61	5.50	9.60	7.60
*Bell Cow, Millbury Grain Co.	Millbury	15.94	15.30	5.67	5.50	9.21	7.60
*Bell Cow, Highland Mills	Newton Hi'lands	15.64	15.30	5.36	5.50	9.79	7.60
Quaker City Flour Mills Co., Philadelphia, Pa.							
* H. K. Webster Co.	Lawrence	14.71	13.00	4.46	3.00	9.47	10.50
* Berkshire Coal & Grain Co.	N. Adams	14.80	13.00	4.59	3.00	8.98	10.50
* J. S. Nason & Co.	Westboro	13.89	13.00	5.25	3.00	10.71	10.50
Red Wing Milling Co., Red Wing, Minn.							
*Bixota, Foster Grain Co.	Lowell	14.89	14.00	4.93	4.80	10.67	13.20
*Bixota, J. S. Nason & Co.	Westboro	14.19	14.00	6.63	4.80	10.53	13.20
Russell-Miller Milling Co., Minneapolis, Minn.							
Hingham Grain Mill Inc.	Hingham	15.94	13.00	5.12	4.00	8.55	11.00
Sleepy Eye Flour Mills Co., Sleepy Eye, Minn.							
MacKenzie & Winslow	Fall River	15.03	14.50	5.05	4.30	9.40	10.50
Foster Grain Co.	Lowell	14.10	14.50	4.81	4.30	9.55	10.50
Star & Crescent Milling Co., Chicago, Ill.							
*Star, C. P. Washburn	Middleboro	14.63	15.00	4.83	4.00	10.29	10.00
David Stott Flour Mills Inc., Detroit, Mich.							
* W. Lord	Athol	14.45	14.00	5.15	4.00	8.25	10.50
* W. Lord	Athol	14.76	14.00	4.32	4.00	9.13	10.50
Thompson Milling Co., Lockport, N. Y.							
Angelus, P. W. Eaton & Co.	Williamstown	13.75	13.00	5.50	4.00	10.03	14.00
George Urban Milling Co., Buffalo, N. Y.							
* P. Foisy	New Bedford	15.33	15.00	4.78	3.50	10.30	12.50
* M. H. Rolfe Est.	Newburyport	15.46	15.00	5.53	3.50	9.33	12.50
Valier & Spies Milling Co., St. Louis, Mo.							
*Valier's, Prentiss, Brooks & Co.	Easthampton	17.78	14.50	4.68	3.50	8.27	10.00
Victor Milling Co., Victor, N. Y.							
*Victor, J. B. Garland & Son	Worcester	14.54	14.60	6.08	4.00	9.76	15.00
Washburn-Crosby Co., Minneapolis, Minn.							
* N. Adams Flour & Grain Co	Lee	13.75	14.00	5.39	4.00	10.38	11.00
* F. W. Dorr Co.	Newton Center	13.75	14.00	5.54	4.00	10.89	11.00
* H. C. Puffer Co.	Springfield	14.19	14.00	5.40	4.00	10.11	11.00
Wells-Abbott-Nieman Co., Schuyler, Neb.							
Sprague & Williams	S. Framingham	16.29	14.00	4.46	3.50	6.48	10.00
Sprague & Williams	S. Framingham	16.34	14.00	4.30	3.50	9.13	10.00
Western Canada Flour Mills Co., Winnipeg, Ca.							
* A. Dodge & Sons	Beverly	15.76	14.50	5.48	4.00	8.42	11.00
* Wm. J. Meek	Fall River	15.94	14.50	5.55	4.00	8.53	11.00
* G. H. Reed	S. Acton	15.59	14.50	5.64	4.00	9.64	11.00

*With Screenings.

WHEAT BRAN—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein		Fat.		Fiber.	
		Found	Guar.	Found	Guar	Found	Guar.
		%	%	%	%	%	%
Western Flour Mills Co., Davenport, Iowa							
Black Hawk,....E. C. Packard	Brockton........	15.94	14.59	4.63	4.00	10.03	11.00
Black Hawk,....N Adams Flour & Grain Co	Lee.............	16.81	14.50	4.17	4.00	8.97	11.00
Wolf Milling Co., Ellinwood ,Kansas							
C. L. Marsh...............	Webster.........	17.69	15.50	3.58	3.50	8.97	10.00
Yerxa, Andrews & Thurston, Minneapolis, Minn.							
Nokomos Durum Wheat, P. W. Eaton & Co..	Williamstown....	12.30	12.00	5.76	5.50	13.44	13.00
Zenith Milling Co., Kansas City, Mo.							
*Zenith....... .W. Livingston	Lowell..........	16.81	15.00	4.84	3.25	7.90	13.50

RYE FEEDS.

Definition. Rye Feeds are by-products obtained in the manufacture of flour from rye.

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar	Fiber Found	Fiber Guar.
Andrew Ruffs Sons, Troy, N. Y.							
Berkshire Coal & Grain Co..	Pittsfield........	14.06	13.50	3.21	3.00	3.69	—
Barber & Bennett, Albany, N. Y.							
* ....Prentiss, Brooks & Co......	Easthampton....	16.38	13.75	3.02	3.00	4.55	6.50
Boutwell Milling Co., Troy, N. Y.							
* .. ..M. E. Ballou & Sons........	Becket..........	13.49	13.50	3.43	3.00	3.78	6.00
Miner-Hillard Milling Co., Wilkes Barre, Pa.							
*Middlings,. ...C. L Marsh.	Webster.........	15.50	12.00	3.35	2.50	3.30	5.00
North Star Feed & Cereal Co., Minneapolis,							
Middlings,... ..C. A. Pierce...............	Hinsdale........	14.80	14.50	3.11	1.50	4.41	5.20
Washburn-Crosby Co., Minneapolis, Minn.							
Middlings, ...T. Steinhard.	Chester.........	16.46	14.00	3.60	3.09	5.46	6.00
Middlings.... C. A. Pierce	Hinsdale........	14.98	14.00	3.35	3.00	4.93	6.00
Middlings,......H. C. Puffer Co............	Springfield.......	15.33	14.00	3.28	3.00	5.94	6.00

*With Screenings.

WH EAT FEEDS WITH ADMIXTURES.—(Wheat and Rye.)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Quaker Oats Co., Chicago, Ill.								
Buckeye Feed,..J. W. Doon & Son	Natick	16.94	15.50	5.22	4.50	7.98	8.50	Mixed wheat feed and rye shorts
Buckeye Feed,..Winslow & MacKenzie Co.	New Bedford	15.59	15.50	5.66	4.50	7.11	8.50	
Buckeye Feed,..Howe Bros Co.	Gardner	15.76	15.50	5.37	4.50	8.09	8.50	
Buckeye Feed,..A. E. Lawrence & Son	Ayer	15.59	15.50	5.23	4.50	7.43	8.50	
Buckeye Feed,..G. Methe & Son	Springfield	15.50	15.50	5.43	4.50	7.76	8.50	

DAIRY AND HORSE FEEDS.—(Containing more than 15% Protein.)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.	Certified Ingredients
J. Bibby & Sons, Liverpool, England								
Dairy,......F. H. Sargent & Co.	Watertown	20.40	18.00	6.32	6.00	12.27	11.00	Undecorticated cotton cake, decorticated cotton cake, wheat middlings, peanut cake, rice polish, rape cake, molasses, soy bean cake, locust beans, salt.
Horse,...J. H. Nye	Brockton	20.31	18.00	7.15	6.00	10.90	11.00	Cottonseed cake, wheat, peanut cake, rice, rape cake, molasses, soy bean cake, locust beans, salt
Horse,...F. H. Sargent & Co.	Watertown	21.24	18.00	6.95	6.00	13.11	11.00	
Buffalo Cereal Co., Buffalo, N. Y.								
Creamery,....J. H. Nye	Brockton	19.31	18.00	6.20	4.00	9.39	9.00	Ground corn, wheat bran and middlings, hominy feed, corn gluten feed, cotton seed meal, oat shorts, oat middlings, oat hulls, ½ of 1% salt
Creamery,....A. Culver Co	Rockland	19.53	18.00	5.29	4.00	10.34	9.00	
Creamery,....J. H. Nye	Brockton	18.74	18.00	5.26	4.00	11.22	9.00	
Creamery,....A. Culver Co.	Rockland	19.79	18 00	5.31	4.00	10.68	9.00	
Chapin & Co., Hammond, Ind.								
Unicorn,.....C. S. Barber	Bernardston	26.18	26.00	5.97	5.50	10.44	10.00	Corn distillers' grains, cotton seed meal, linseed meal, hominy meal, malt sprouts, gluten feed, corn starch by-products with corn bran, barley feed, brewers' grains, wheat bran
Unicorn,.....H. K. Webster Co.	Lawrence	26.93	26.00	6.06	5.50	9.59	10.00	
Unicorn,.....S. I. Davenport & Son	N. Grafton	27.14	26.00	7.15	5.50	11.00	10.00	
Unicorn,.....I. J. Rowell	Pepperell	25.66	26.00	5.99	5.50	10.35	10.00	
Unicorn,.....W. N. Potter Grain Co	Princeton	25.01	26.00	7.69	5.50	9.80	10.00	
Unicorn,.....C. O. Parmenter	S. Sudbury	25.31	26.00	7.18	5.50	10.75	10.00	
Unicorn,.......A. J. Richards & Son	Weymouth	27.49	26.00	7.48	5.50	10.23	10.00	

DAIRY AND HORSE FEEDS—(Containing more than 15 % Protein.)—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Chas. M. Cox Co., Boston, Mass.								
Wirthmore,.....J. E. Merrick & Co.	Amherst	26.18	25.00	5.57	5.00	9.09	9.50	Cottonseed meal, linseed meal, gluten feed, distillers' grains, wheat bran, malt sprouts, hominy or corn meal and not over ½ of 1% salt.
Wirthmore,.....Eastern Grain Co.	Bridgewater	25.88	25.00	4.89	5.00	8.85	9.50	
Wirthmore,.....G. F. Greene Coal Co.	Campello	25.83	25.00	5.05	5.00	8.81	9.50	
Wirthmore,.....G. A. Fair	Holliston	26.53	25.00	4.71	5.00	8.31	9.50	
Wirthmore,.....A. Culver Co.	Rockland	26.79	25.00	5.10	5.00	8.51	9.50	
Wirthmore,.....F. Diehl & Son	Wellesley	24.69	25.00	4.62	5.00	9.37	9.50	
Wirthmore,.....P. W. Eaton & Co.	Williamstown	26.67	25.00	5.59	5.00	9.06	9.50	
Wirthmore,.....P. W. Eaton & Co.	Williamstown	25.57	25.00	4.59	5.00	9.21	9.50	
E. Crosby & Co., Brattleboro, Vermont								
Ready Ration,..A. F. Sanctuary	Amherst	27.45	25.00	8.02	7.00	6.79	9.00	Distillers' grains, cottonseed meal, oil meal, malt sprouts, wheat bran, wheat middlings, hominy feed and ½% salt.
Ready Ration,..Berkshire Coal & Grain Co.	N. Adams	24.08	25.00	5.71	7.00	9.28	9.00	
Dewey Bros .Co., Blanchester, Ohio.								
Stock Feed,.....Mansfield Coal & Grain Co	Mansfield	15.94	11.00	5.36	3.50	11.53	12.00	Hominy feed, cottonseed meal, linseed oil meal, wheat and rye middlings, oat feed (oat middlings, oat hulls and oat shorts) and ½% salt
Stock Feed,.....Record & Cote	New Bedford	16.81	11.00	3.98	3.50	12.86	12.00	
Stock Feed,.....Sparrow & Co.	Northboro	14.06	11.00	3.98	3.50	12.51	12.00	
Stock Feed,.....Stanley Wood Grain Co.	Taunton	17.39	11.00	5.13	3.50	10.61	12.00	
Elmore Milling Co., Oneonta, N. Y.								
Milk Grains,....W. N. Potter Grain Co.	Gardner	24.69	25.00	5.48	6.00	10.49	10.00	Corn distillers' grains, cottonseed meal, old process linseed meal, corn gluten feed, hominy meal, wheat bran, malt sprouts, brewers' grains, salt
Milk Grains,....W. N. Potter's Sons & Co.	Hadley	24.34	25.00	5.76	6.00	9.38	10.00	
Milk Grains,....W. N. Potter's Sons & Co.	Hadley	26.84	25.00	5.62	6.00	10.00	10.00	
Milk Grains,...Potter Bros. & Co.	N. Adams	26.02	25.00	4.73	6.00	9.13	10.00	
Milk Grains,....W. N. Potter's Sons & Co.	Northampton	26.27	25.00	6.10	6.00	9.31	10.00	
Milk Grains,....A. D. Potter	Orange	26.14	25.00	5.80	6.00	9.71	10.00	
Milk Grains,....A. D. Potter	Orange	27.58	25.00	5.35	6.00	9.25	10.00	
Milk Grains,....P. W. Eaton & Co.	Williamstown	24.96	25.00	5.63	6.00	10.71	10.00	

DAIRY AND HORSE FEEDS—(Containing more than 15% Protein)—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein. Found	Protein. Guar.	Fat Found	Fat Guar.	Fiber. Found	Fiber. Guar.	Certified Ingredients.
		%	%	%	%	%	%	
Larrowe Milling Co., Detroit, Mich.								
Larro, ... Bond Grain Co.	Charlton	21.36	19.00	3.89	3.00	10.97	14.00	Cottonseed meal, corn gluten feed, distillers grains (mainly from corn), beet pulp, wheat bran, standard wheat middlings and ¾ of 1% salt
Larro, ... J. A. Griffeth	Gt. Barrington	20.58	19.00	3.56	3.00	12.85	14.00	
Larro, ... J. A. Griffeth	Gt. Barrington	20.05	19.00	3.67	3.00	12.31	14.00	
Larro, ... Hingham Grain Mill Inc.	Hingham	19.70	19.00	3.69	3.00	11.88	14.00	
Larro, ... Mansfield Milling Co.	Mansfield	21.63	19.00	3.72	3.00	11.75	14.00	
Larro, ... Robinson & Jones	Natick	19.61	19.00	3.70	3.00	12.12	14.00	
Larro, ... J. Cushing & Co.	New Bedford	21.36	19.00	3.30	3.00	11.52	14.00	
Larro, ... Guay Bros.	New Bedford	19.79	19.00	4.10	3.00	11.80	14.00	
Larro, ... W. C. Brett	N. Abington	20.75	19.00	4.26	3.00	11.80	14.00	
Larro, ... G. H. Reed	S. Acton	20.40	19.00	3.55	3.00	12.19	14.00	
Larro, ... C. L. Marsh	Webster	20.40	19.00	3.45	3.00	12.96	14.00	
Larro, ... H. W. Kimball	Westboro	20.23	19.00	3.90	3.00	12.97	14.00	
Larro, ... J. B. Garland & Son	Worcester	20.84	19.00	2.99	3.00	12.73	14.00	
Ropes Bros., Salem, Mass.								
Horse Feed, ... Ropes Bros.	Danvers	18.09	16.00	4.75	5.00	11.68	9.50	Hominy meal, ground oats, linseed oil meal, wheat mixed feed, gluten feed, alfalfa meal, cottonseed meal, sphagnum moss, molasses
Horse Feed, ... Ropes Bros.	Danvers	16.99	16.00	4.11	5.00	12.88	9.50	
Horse Feed, ... Robes Bros.	Salem	15.94	16.00	6.07	5.00	8.39	9.50	
Ubiko Milling Co., Cincinnati, Ohio								
Union Grains, . . . W. E. Bryant & Co.	Brockton	26.27	24.00	8.02	7.00	9.48	9.00	Corn distillers' grains, cottonseed meal, old process linseed meal, wheat middlings, wheat bran, hominy meal, barley, brewers' grains, malt sprouts, and ½ of 1% salt
Union Grains, . . . H. C. Bowen & Son	Cheshire	25.83	24.00	5.74	7.00	8.46	9.00	
Union Grains, . . G. F. Wetherbee Co.	Gardner	24.96	24.00	7.29	7.00	10.96	9.00	
Union Grains, . . . Haverhill Milling Co.	Haverhill	24.43	24.00	6.92	7.00	10.06	9.00	
Union Grains, . . . H. K. Webster Co.	Lawrence	26.36	24.00	5.91	7.00	10.02	9.00	
Union Grains, . . . Berkshire Coal & Grain	N. Adams	25.22	24.00	7.58	7.00	9.15	9.00	
Union Grains, . . . Potter Bros & Co.	N. Adams	27.06	24.00	6.24	7.00	9.84	9.00	
Union Grains, . . . Cutler Grain Co.	S. Framingham	23.99	24.00	7.78	7.00	9.64	9.00	
Union Grains, . . . Cutler Grain Co.	S. Framingham	25.66	24.00	6.58	7.00	10.23	9.00	
Union Grains, . . . Cutler Co.	W. Brookfield	24.74	24.00	6.28	7.00	9.15	9.00	
A. H. Wood & Co., Framingham, Mass.								Corn meal, cottonseed meal, alfalfa meal, beet pulp, corn gluten feed, wheat bran, wheat middlings, oil meal, ground oats, 1% salt.
Dairy Blend, ... A. H. Wood & Co.	Framingham	22.61	22.00	6.00	6.00	9.05	10.00	
Dairy Blend, ... A. H. Wood & Co.	Framingham	24.08	22.00	7.96	6.00	9.73	10.00	

MOLASSES FEEDS.—(Containing more than 15% Protein.)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar	Found	Guar.	
		%	%	%	%	%	%	
American Milling Co., Peoria, Ill.								
Sucrene Dairy,. . G. A. Fair	Holliston	19.00	16.50	4.52	3.50	10.97	12.00	Molasses, cottonseed meal, corn gluten feed, ground and bolted grain screenings, clipped oat by-product, distillers' grains, salt.
Sucrene Dairy,. . Foster Grain Co.	Lowell	19.40	16.50	5.00	3.50	11.33	12.00	
Sucrene Dairy,. . Foster Grain Co.	Lowell	17.08	16.50	5.03	3.50	12.36	12.00	
Sucrene Dairy,. . A. N. Whittemore & Co.	Worcester	16.90	16.50	5.30	3.50	12.83	12.00	
Buffalo Cereal Co., Buffalo, N. Y.								
Iroquois,. . . . . . . Griffin Bros.	Fall River	16.53	16.00	3.46	4.00	9.61	9.00	Ground corn, gluten feed, cottonseed meal, ground grain screenings, molasses, and ½% salt.
Iroquois,. . . . . . . J. Altman	New Bedford	15.25	16.00	2.56	4.00	10.04	9.00	
Clover Leaf Milling Co., Buffalo, N. Y.								
Cloverleaf Dairy, W. S. Harrington	Adams	16.85	16.50	3.73	3.50	12.33	15.00	Cottonseed meal, corn gluten feed, mixed broken grains consisting of wheat, corn, barley flax, speltz, ground grain screenings, cocoa shell meal, clipped oat by-product, molasses and ½ of 1% salt.
Cloverleaf Dairy, L. E. Whitaker	E. Longmeadow	17.30	16.50	4.56	3.50	11.58	15.00	
Cloverleaf Dairy, Highland Mills	Newton Hi'lands	17.47	16.50	5.12	3.50	11.12	15.00	
Cloverleaf Dairy, Potter Bros & Co.	N. Adams	18.28	16.50	3.64	3.50	12.86	15.00	
Cloverleaf Dairy, W. N. Potter Grain Co.	Princeton	17.48	16.50	3.92	3.50	10.76	15.00	
Cloverleaf Dairy, G. H. Reed	S. Acton	17.98	16.50	3.46	3.50	10.41	15.00	
Cloverleaf Dairy, C. B. Sawin & Son	Southboro	16.41	16.60	3.46	3.50	11.68	15.00	
Cloverleaf Dairy, Cutler Grain Co.	S. Framingham	19.49	16.50	3.28	3.50	10.08	15.00	
Chapin & Co., Hammond, Ind.								
Lactola Dairy,. . . C. S. Barber	Bernardston	17.66	16.50	3.22	3.00	10.40	12.00	Cottonseed meal, corn distillers' grains, clipped oat by-product, corn gluten feed, corn germ meal, brewers' grains, ivory nut meal, molasses, salt.
H-O Company, Buffalo, N. Y.								
Algrane Milk,. . . Lenox Coal & Grain Co.	Lenoxdale	16.51	14.00	4.64	4.00	10.27	10.00	Oat hulls, corn gluten feed, molasses, wheat middlings, ground corn, ground grain screenings, cottonseed meal, crushed oats, oat shorts, ½ of 1% salt
Algrane Milk,. . . Lenox Coal & Grain Co.	Lenoxdale	14.58	14.00	4.44	4.00	10.78	10.00	
Algrane Milk,. . . Berkshire Coal & Grain Co.	Pittsfield	17.28	14.00	4.02	4.00	11.17	10.00	
International Sugar Feed Co., Minneapolis, Minn.								
Special Dairy, . . Scott Grain Co.	Amesbury	13.78	15.00	5.33	4.50	11.48	12.00	Cottonseed meal, molasses, ground cleaned grain screenings, ground clipped oat by-product, salt.
Special Dairy, . . J. O. Ellison & Co.	Haverhill	15.72	15.00	4.31	4.50	13.62	12.00	
Special Dairy, . . W. Livingston	Lowell	16.14	15.00	4.43	4.50	11.35	12.00	

MOLASSES FEEDS.—(Containing more than 10% Protein.)—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at.	Protein.		Fat.		Fiber		Certified Ingredients
		Found	Guar	Found	Guar	Found	Guar.	
		%	%	%	%	%	%	
Nowak Milling Co., Buffalo, N. Y.								
Butterene Dairy, Foster Grain Co.	Lowell	18.42	17.50	4.61	4.00	11.68	12.00	Cottonseed meal, malt sprouts, clipped oat by-product, ground and bolted grain screenings, molasses, ¼ of 1% salt.
Creme-O-Lene, A. Dodge & Sons	Beverly	19.92	20.00	5.43	4.00	9.97	9.00	Cottonseed meal, corn gluten feed, linseed oil meal, wheat middlings, corn distillers' grains, corn feed meal, clipped oat by-product, malt sprouts, brewers' grains, ground and bolted wheat screenings, molasses, ¼ of 1% salt.
Quaker Oats Co., Chicago, Ill.								
Blue Ribbon, C. L. Marsh	Webster	25.21	25.00	3.63	3.50	9.99	12.00	Hominy feed, malt sprouts, wheat bran, cottonseed meal, oat meal mill by-product (oat middlings, oat hulls, oat shorts) molasses, new process linseed oil meal.
Ralston Purina Co., St. Louis, Mo.								
Cow Chow, C. F. Pease	Chester	25.23	24.00	3.97	5.00	12.91	12.00	Cottonseed meal, gluten feed, brewers' grains, molasses, alfalfa and 1% salt
Cow Chow, Prentiss, Brooks & Co.	Easthampton	23.51	24.00	3.83	5.00	11.47	12.00	
Cow Chow, Berkshire Coal & Grain Co.	Pittsfield	23.12	24.00	3.83	5.00	12.59	12.00	
Cow Chow, Berkshire Coal & Grain Co.	Pittsfield	26.94	24.00	4.31	5.00	10.68	12.00	
Cow Chow, Sprague & Williams.	S. Framingham	24.12	24.00	4.17	5.00	11.39	12.00	
Cow Chow, H. C. Puffer Co.	Springfield	24.10	24.00	4.44	5.00	11.89	12.00	
Cow Chow, P. W. Eaton & Co.	Williamstown	25.97	24.00	4.02	5.00	13.02	12.00	
Protena Dairy, J. Cushing & Co.	Fitchburg	15.99	16.50	3.62	3.50	12.09	12.00	Cottonseed meal, brewers' grains, clipped oat by-product, ground wheat screenings, molasses and 1% salt.
Protena Dairy, J. Cushing & Co.	Fitchburg	16.36	16.50	3.64	3.50	12.84	12.00	
Protena Dairy, J. Cushing & Co.	New Bedford	14.51	16.50	4.16	3.50	12.55	12.00	
Protena Dairy, Plummer & Jennings Gr. Co.	New Bedford	14.68	16.50	4.30	3.50	13.46	12.00	
Protena Dairy, C. B. Sawin & Son	Southboro	15.52	16.50	4.02	3.50	13.54	12.00	
Protena Dairy, Sprague & Williams.	S. Framingham	16.38	16.50	4.10	3.50	13.94	12.00	
Protena Dairy, G. Methe & Son	Springfield	18.05	16.50	4.80	3.50	19.40	12.09	
Protena Dairy, J. Cushing & Co.	Winchendon	16.72	16.50	3.47	3.50	12.51	12.00	
Republic Milling Co., E. St. Louis, Ill								
Republic Dairy, F. W. Dorr & Co.	Newton Center	16.94	16.50	3.13	3.00	11.03	12.00	Cottonseed meal, malt sprouts, alfalfa, ground screenings, (from corn, oats, wheat, barley), cane molasses, salt
Western Grain Products Co., Hammond, Ind.								
Hammond Dairy, W. E. Bryant & Co.	Brockton	14.79	16.50	3.90	3.50	9.79	11.00	Cottonseed meal, corn distiller's grains, malt sprouts, ground clipped oat by-product, ground grain screenings, molasses and salt.
Hammond Dairy, W. E. Bryant & Co.	Brockton	17.43	16.50	3.90	3.50	11.15	11.00	
Hammond Dairy, F. F. Woodward Co.	Fitchburg	16.23	16.50	3.59	3.50	12.39	11.00	
Hammond Dairy, F. F. Woodward Co.	Fitchburg	17.82	16.50	3.49	3.50	11.22	11.00	
Hammond Dairy, J. O. Ellison & Co.	Haverhill	16.17	16.50	5.13	3.50	12.97	11.00	
Hammond Dairy, John Shea	Lawrence	17.82	16.50	3.88	3.50	12.14	11.00	
Hammond Dairy, A. J. Carr.	Northboro	16.46	16.50	3.13	3.50	11.83	11.00	
Hammond Dairy, A. Culver Co.	Rockland	14.88	16.50	3.58	3.50	8.79	11.00	
Hammond Dairy, Whitman Coal & Gr. Co.	Whitman	16.74	16.50	3.74	3.50	11.37	11.00	

CALF MEALS.

Manufacturer or Jobber, Brand and Retailer	Sampled at	Protein.		Fat.		Fiber.		Certified Ingredients
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Blatchford's Calf Meal Factory, Waukegan, Ill.								Locust bean meal, unpressed flax seed, wheat flour, barley meal, ground beans and peas, rice polish, old process oil meal, cocoa shell meal, cocoanut meal, recleaned cottonseed meal, fenugreek, dried milk, anise and salt.
Blatchford's,....E. A. Cole..................	Housatonic......	23.52	24.00	5.93	5.00	6.53	6.75	
Blatchford's....H. C. Puffer Co............	Springfield......	25.04	24.00	5.93	5.00	5.41	6.75	
Blatchford's,....J. B. Garland & Son......	Worcester......	25.22	24.00	5.41	5.00	5.95	6.75	
Cloverleaf Milling Co., Buffalo, N. Y.								
Cloverleaf,......L. E. Whitaker......	E. Longmeadow..	24.38	25.00	5.92	6.00	7.04	7.00	Pulverized malt flour, wheat flour, linseed meal, cocoa shell meal, cottonseed meal and ½ of 1% salt.
Park & Pollard Co., Boston, Mass.								
Highland Mills.	Newton Hi'lands	24.65	25.00	5.65	5.00	5.60	6.00	Flax seed, beans and lentils, wheat flour, cottonseed meal, locust beans, cocoa meal, anise, fenugreek, trace of salt.
Ryde & Co., Chicago, Ill.								
Ryde's,.........H. G. Hill Co....	Williamsburg..	24.52	25.00	4.62	5.00	6.67	6.00	Carob beans, flaxseed, wheat flour, cottonseed meal, beans and lentils, fenugreek, anise, cocoa meal, salt.
Ryde's.........W. W. Holmes......	Webster......	24.87	25.00	5.20	5.00	4.91	6.00	
Sugarota Calf Meal Co., Winona, Minn.								
Sugarota,.......J. B. Garland & Son.........	Worcester.....	23.47	25.00	5.05	6.00	3.53	6.00	Pulverized wheat, pulverized malt, linseed meal, cottonseed meal.
Sugarota,......Wilson & Holden...........	Worcester......	24.34	25.00	5.11	6.00	4.53	6.00	

MISCELLANEOUS FEEDS.

Manufacturer or Jobber, Brand and Retailer	Sampled at	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.	Certified Ingredients
John C. Dow Co., Boston, Mass.								
Dog Food,......W. B. Herrick......	Beverly	20.49	20.00	9.67	5.00	--	1.00	Dried meat and bread
Lexington Grain Co., Lexington, Mass.								
Star Hog Feed, Lexington Grain Co...	Lexington	15.76	10.00	4.95	3.00	6.19	11.00	Wheat middlings, corn meal, mill refuse, mill sweepings, salt
Newsome Feed & Grain Co., Pittsburg, Pa.								
Palmo Middlings, W. G. Horton..........	Ipswich....	17.34	16.00	8.09	6.00	6.47	7.00	Flour middlings and palm oil.

II STARCHY (CARBOHYDRATE) FEEDS.

CORN MEAL.

Manufacturer or Jobber, Brand and Retailer.	Sampled at.	Protein.		Fat.		Fiber	
		Found	Guar.	Found	Guar.	Found	Guar
		%	%	%	%	%	%
Ground by Retailer.							
Berkshire Coal & Gr. Co.	N. Adams	9.28	—	1.88	—	2.65	—
A. Culver Co.	Rockland	8.45	—	2.78	—	0.84	—
Corn Middlings. Glen Mills Cereal Co.	Rowley	11.47	—	7.57	—	4.70	—
Corn Middlings. Glen Mills Cereal Co.	Rowley	11.12	—	7.82	—	4.93	—
Hingham Grain Mill Inc.	Hingham	9.23	—	3.72	—	1.73	—
W. N. Potter Grain Co.	Hubbardston	9.94	—	5.82	—	4.00	—
Potter Grain Co.	Shelburne Falls	9.72	—	3.06	—	2.30	—
C. P. Washburn.	Middleboro.	8.49	—	2.88	—	2.20	—
Crk'd. Corn Dust Wilder & Wotton.	Lowell.	9.28	—	3.32	—	1.58	—
Amendt Milling Co., Monroe, Mich.							
Corn feed Meal Marlboro Grain Co.	Marlboro.	8.41	9.00	3.69	2.60	2.43	6.00
Anstedt & Burk Co., Springfield, Ohio							
Corn Feed Meal, Knight Grain Co.	Newburyport.	9.54	9.00	4.31	3.00	1.68	4.00
Buffalo Cereal Co., Buffalo, N. Y.							
Mohawk, F. H. Crane & Sons	Quincy	9.11	—	3.72	—	1.00	
Lenox Coal Co.	Lenoxdale.	7.75	—	2.78	—	1.06	
E. Crosby & Co., Brattleboro, Vt.							
Corn Feed Meal, MacKenzie & Winslow.	Fall River	8.32	7.00	2.93	2.50	1.35	5.00
Globe Elevator Co., Buffalo, N. Y.							
No. Adams Flour & Gr. Co.	Lee.	7.88	—	2.61	—	0.98	
Meech & Stoddard, Middletown, Conn.							
P. Foisy	New Bedford	9.94	—	4.10	—	2.25	
Mystic Milling & Feed Co., Rochester, N. Y.							
C. A. Pierce	Hinsdale.	8.67	—	3.50	—	1.82	
Park & Pollard, Boston, Mass.							
W. B. Herrick	Beverly.	8.14	—	2.03	—	0.65	—
H. K. Webster Co., Lawrence, Mass.							
Damaged Meal, Foster Grain Co.	Lowell.	9.94	—	3.02	—	1.61	-

CORN BRAN.

Glenn Mills Cereal Co., Rowley, Mass.							
Glen Mills Cereal Co.	Rowley	10.33	9.00	6.24	4.00	9.09	8.00
Glen Mills Cereal Co.	Rowley	10.24	9.00	6.13	4.00	8.65	8.00
C. W. Wagar & Co., Philadelphia, Pa.							
Middlesex, MacKenzie & Winslow.	Fall River	9.51	7.00	6.20	4.00	8.36	15.00

HOMINY MEAL.

Definition. Hominy Meal, feed or chop is a by-product in the manufacture of hominy grits from corn, and consists of the hull and corn germ, together with a considerable portion of the corn starch.

American Hominy Co., Indianapolis, Ind.							
Homco, Butler Coal & Grain Co.	Adams	10.20	10.00	6.86	7.00	4.24	7.00
Homco, Bond Grain Co.	Charlton	12.39	10.00	9.00	7.00	4.16	7.00
Homco, W. J. Meek,	Fall River	11.82	10.00	9.13	7.00	4.43	7.00
Homco, N. Paquin & Sons	Fall River	11.56	10.00	9.70	7.00	4.88	7.00
Homco, Howe Bros.	Gardner	11.38	10.00	8.93	7.00	4.88	7.00
Homco, J. Cushing & Co.	Hudson	10.82	10.00	6.74	7.00	4.38	7.00
Homco, Lexington Grain Co.	Lexington	9.81	10.00	6.44	7.00	4.49	7.00
Homco, Millbury Grain Co.	Millbury	11.64	10.00	9.36	7.00	5.23	7.00
Homco, J. W. Doon & Son.	Natick	11.47	10.00	8.94	7.00	5.08	7.00
Homco, J. B. Bridges & Co.	S. Deerfield	9.81	10.00	7.15	7.00	4.15	7.00
Homco, H. H. Capen.	Spencer	10.68	10.00	8.92	7.00	4.73	7.00
Homco, Whitman Coal & Grain Co.	Whitman	11.82	10.00	9.12	7.00	4.82	7.00
Exo, Bond Grain Co.	Charlton	11.82	11.25	6.70	6.75	4.38	6.50

HOMINY MEAL.—(*Continued*)

Manufacturer or Dealer, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.	
		Found	Guar.	Found	Guar.	Found	Guar
		%	%	%	%	%	%
Baltimore Pearl Hominy Co., Baltimore, Md.							
A. Dodge & Sons Corp.	Beverly	13.93	10.00	7.18	6.00	5.00	8.00
G. B. Brown	Ipswich	11.91	10.00	4.80	6.00	2.95	8.00
Morse Bros.	Southbridge	10.94	10.00	6.39	6.00	4.27	8.00
Buffalo Cereal Co., Buffalo, N. Y.							
W. E. Bryant & Co.	Brockton	11.73	10.00	6.87	6.00	3.85	5.00
J. H. Nye	Brockton	10.42	10.00	5.48	6.00	3.62	5.00
W. C. Brett	N. Abington	10.33	10.00	5.45	6.00	4.03	5.00
Chas. M. Cox Co., Boston, Mass.							
Paragon, G. A. Fair	Holliston	12.04	10.50	9.09	7.50	5.05	—
Wirthmore, Eastern Grain Co.	Bridgewater	10.16	9.50	7.83	7.50	4.45	5.00
Wirthmore, G. F. Green Coal Co.	Campello	10.42	9.50	7.56	7.50	4.25	5.00
Wirthmore, Haverhill Milling Co.	Haverhill	10.33	9.50	7.91	7.50	4.09	5.00
Wirthmore, Ropes Bros.	Salem	11.56	9.50	8.90	7.50	4.54	5.00
Wirthmore, C. O. Parmenter	S. Sudbury	11.47	9.60	8.97	7.50	4.71	5.00
Wirthmore, W. W. Holmes	Webster	9.46	9.50	5.65	7.50	2.34	5.00
Eagle Roller Mill Co., New Ulm, Minn.							
White, Winslow & MacKenzie Co.	New Bedford	10.56	10.10	7.01	7.93	5.35	6.43
Yellow, Winslow & MacKenzie Co.	New Bedford	9.77	10.10	6.27	7.93	5.35	6.43
Yellow, W. W. Holmes	Webster	10.77	10.10	7.05	7.93	4.92	6.43
Evans Milling Co., Indianapolis, Ind.							
Evans, Cummings & Chute	Woburn	11.12	10.00	8.65	7.50	4.71	7.00
Chas. A. Krause Milling Co., Milwaukee, Wis.							
Badger, J. A. Griffeth	Gt. Barrington	12.48	10.00	6.67	6.00	4.27	5.00
Badger, J. A. Griffeth	Gt. Barrington	12.17	10.00	8.03	6.00	5.35	5.00
Badger, Record & Cote	New Bedford	11.58	10.00	6.62	6.00	3.18	5.00
Badger, Glen Mills Cereal Co.	Rowley	11.56	10.00	6.45	6.00	4.17	5.00
Miner-Hillard Milling Co., Wilkes Barre, Pa.							
Wallace Grain Co.	Clinton	11.87	10.00	6.30	5.00	2.68	5.00
J. N. Waite	Easthampton	10.94	10.00	4.80	5.00	3.41	5.00
Geo. F. Wetherbee Co.	Gardner	11.29	10.00	7.52	5.00	3.90	5.00
Wm. Livingston	Lowell	10.33	10.00	6.51	5.00	3.42	5.00
John Franks	New Bedford	11.43	10.00	7.57	5.00	4.20	5.00
Potter Grain Co.	Shelburne Falls	11.64	10.00	4.77	5.00	3.94	5.00
G. H. Reed	S. Acton	10.59	10.00	6.19	5.00	3.05	5.00
John Franks	S. Dartmouth	10.42	10.00	6.30	5.00	3.57	5.00
Nebraska Corn Mills, Lincoln, Neb.							
Whitman Coal & Grain Co.	Whitman	12.48	10.00	10.22	9.00	5.76	4.50
Patent Cereals Co., Geneva, N. Y.							
Geo. R. Parker	Danversport	10.42	10.00	5.36	6.00	4.08	5.00
W. N. Potter's Sons & Co.	Hadley	10.59	10.00	5.54	6.00	4.40	5.00
Stanley Grain Co.	Lawrence	12.48	10.00	9.30	6.00	6.39	5.00
J. W. Day & Co.	Lynn	12.52	10.00	6.59	6.00	4.60	5.00
A. D. Potter	Orange	10.61	10.00	5.27	6.00	4.12	5.00
Potter Grain Co.	Shelburne Falls	11.91	10.00	6.73	6.00	4.60	5.00
H. C. Puffer Co.	Springfield	10.59	10.00	5.24	6.00	4.40	5.00
J. B. Garland & Son	Worcester	11.47	10.00	6.94	6.00	4.74	5.00
Plymouth Milling Co., LeMars, Iowa.							
Yellow, W. N. Potter Grain Co.	Gardner	9.81	10.00	6.80	8.50	3.85	6.35
Yellow, Stanley Wood Grain Co.	Taunton	11.34	10.00	9.28	8.50	4.70	6.35
Quaker Oats Co., Chicago, Ill.							
Yellow, MacKenzie & Winslow	Fall River	11.03	9.00	7.70	4.00	3.80	4.00
Yellow, John Shea	Lawrence	11.82	9.00	6.89	4.00	3.89	4.00
Yellow, Wilder & Wotton	Lowell	11.43	9.00	7.97	4.00	3.36	4.00
Yellow, Pierre Guay	New Bedford	11.47	9.00	7.15	4.00	3.81	4.00
Yellow, Guay Bros.	New Bedford	10.07	9.00	7.65	4.00	4.10	4.00
Yellow, Knight Grain Co.	Newburyport	10.99	9.00	7.58	4.00	3.35	4.00
Yellow, Beaver Coal & Grain Co.	Norwood	10.77	9.00	8.02	4.00	3.30	4.00

HOMINY MEAL.—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at.	Protein.		Fat		Fiber	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
M. G. Rankin & Co., Milwaukee, Wis.							
Jersey White, John Shea	Lawrence	11.64	10.00	6.69	6.00	5.06	5.00
Jersey White, Glen Mills Cereal Co.	Rowley	12.39	10.00	7.88	6.00	4.30	5.00
Jersey White, Cutler Grain Co.	S. Framingham.	9.72	10.00	7.28	6.00	6.82	5.00
Jersey Yellow, F. Diehl & Son	Wellesley	12.61	10.00	9.06	6.00	4.33	5.00
J. E. Soper Co., Boston, Mass.							
Blue Ribbon, MacKenzie & Winslow	Fall River	11.17	10.00	5.62	6.00	4.15	5.00
Blue Ribbon, F. F. Woodward Co.	Fitchburg.	9.81	10.00	7.07	6.00	4.16	5.00
Blue Ribbon, A. T. Knight Co.	Hudson.	11.56	10.00	[illegible]	6.00	[illegible]	5.00
Blue Ribbon, Winslow & MacKenzie.	New Bedford.	10.94	10.00	5.32	6.00	4.32	5.00
Blue Ribbon, A. N. Whittemore & Co.	Worcester.	10.34	10.00	5.95	6.00	4.17	5.00
Blue Ribbon, A. N. Whittemore & Co.	Worcester	11.34	10.00	6.32	6.00	4.30	5.00
Standard Cereal Co., Chillicothe, Ohio							
Logan, C. I. Marsh	Webster	9.72	9.00	7.92	7.00	5.24	6.00
Suffern-Hunt Mills, Decatur, Ill.							
Acme, C. A. Pierce.	Hinsdale	10.82	9.30	7.88	7.10	4.25	10.00
Acme, E. J. Adams	Gt. Barrington.	10.33	9.30	7.41	7.10	4.44	10.00

PROVENDER.

Definition. Provender is a mixture of whole corn and whole oats ground together.

Berkshire Coal & Grain Co., Pittsfield, Mass.							
Berkshire Feed, Berkshire Coal & Grain Co.	Pittsfield	11.12	—	4.25		5.84	—
Buffalo Cereal Co., Buffalo, N. Y.							
1-2 and 1-2, Lenox Coal Co.	Lenoxdale.	10.03	9.00	4.66	4.00	5.50	4.00
E. A. Cowee Est., Worcester, Mass.							
No. 1, I. J. Rowell	Pepperell.	10.24	9.00	4.06	3.00	4.50	10.00
No. 1, I. J. Rowell	Pepperell.	10.51	9.00	4.03	3.00	4.62	10.00
Globe Elevator Co., Buffalo, N. Y.							
Lenox Coal & Grain Co.	Lenoxdale.	10.42	—	4.55	—	5.43	
Imperial Grain & Milling Co., Toledo, Ohio							
Steam Cooked, John J. White	Boston.	10.07	9.50	4.40	4.00	3.54	4.00
Steam Cooked, Rollstone Grain Co.	Fitchburg.	9.42	9.50	4.44	4.00	3.88	4.00

DRIED BEET PULP.

Definition. Dried Beet Pulp is the dried sugar beet residue obtained in the manufacture of beet sugar.

The Hottelet Co., Milwaukee, Wis.							
Eastern Grain Co.	Bridgewater	8.46	8.00	0.79	0.50	18.41	20.00
M. G. Williams	Taunton	8.58	8.00	0.94	0.50	18.39	20.00
Larrowe Milling Co., Detroit, Mich,.							
Ropes Bros.	Danvers.	9.68	8.00	0.24	0.50	19.43	20.00
Mansfield Milling Co	Mansfield	8.41	8.00	0.71	0.50	19.04	20.00
J. W. Doon & Son	Natick	8.06	8.00	0.60	0.50	20.36	20.00
P. Foisy	New Bedford.	7.14	8.00	0.82	0.50	18.75	20.00
Glen Mills Cereal Co.	Rowley	9.33	8.00	1.10	0.50	18.41	20.00
With Molasses, Bond Grain Co.	Charlton	7.55	8.00	0.31	0.50	16.42	20.00

OAT FEED.

Definition. Oat Feed is the residue resulting from the manufacture of cereal breakfast foods from oats.

Hecker Cereal Co., New York							
Ropes Bros.	Danvers.	2.59	5.00	1.03	1.50	31.20	30.00
W. G. Horton	Ipswich.	3.81	5.00	1.81	1.50	28.59	30.00
Purity Oats Co., Davenport, Iowa							
Purity, Highland Mills.	Newton Hi'lands	4.64	6.73	1.65	2.71	27.75	32.65
Quaker Oats Co., Chicago, Ill.							
Vim, M. G. Williams	Taunton	5.92	5.00	1.67	2.00	26.17	28.00
Vim, M. G. Williams	Taunton	4.52	5.00	1.37	2.00	26.85	28.00
Robin Hood Mills Ltd., Moose Jaw, Sask. Can.							
W. B. Herrick	Beverly	6.48	5.25	2.67	2.50	23.75	28.00
J. B. Garland & Son	Worcester	7.44	5.25	2.97	2.50	25.63	28.00

STOCK AND HORSE FEEDS.

Manufacturer or Jobber, Brand and Retailer	Sampled at	Protein.		Fat		Fiber.		Certified Ingredients
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Amendt Milling Co., Monroe, Mich.								
A. M. C. O. Chop, C. L. Marsh	Webster	10.42	7.87	3.40	3.92	6.81	10.95	Corn feed meal, wheat screenings, corn screenings, oat screenings, Kaffir corn screenings, milo maize screenings, wheat gluten, corn gluten feed, wheat bran.
Buffalo Cereal Co., Buffalo, N. Y.								
Chop Feed,.....J. Cushing & Co.	New Bedford	9.46	7.00	4.82	3.00	11.55	9.00	Ground corn, oats and barley, hominy feed oat shorts and oat hulls.
Horse Feed.....J. O. Ellison & Co.	Haverhill	12.26	10.00	3.96	4.00	8.88	9.00	Ground oats, corn and barley, wheat middlings, hominy feed, oat shorts, oat middlings, oat hulls, linseed meal, corn gluten feed.
Horse Feed, ..J. Cushing & Co.	New Bedford	11.99	10.00	4.43	4.00	10.08	9.00	
Horse Feed,....Winslow & MacKenzie Co.	New Bedford	12.17	10.00	4.26	4.00	10.25	9.00	
Horse Feed,....A. Culver Co.	Rockland	12.17	10.00	4.71	4.00	9.49	9.00	
Steam Cooked Feed, H. L. Patrick	Hopedale	11.12	8.00	5.85	4.00	5.98	9.00	Ground corn and oats, hominy feed, oat shorts oat middlings, oat hulls, ⅓ of 1% salt.
Stock Feed,.....J. H. Nye	Brockton	10.42	8.00	5.83	4.00	8.90	9.00	Ground corn, oats and barley, wheat middlings, corn gluten feed, hominy feed, oat shorts, oat middlings, oat hulls, ⅓ of 1% salt.
Stock Feed,.....Griffin Bros.	Fall River	10.68	8.00	4.90	4.00	3.71	9.00	
Stock Feed,.....H. L. Patrick	Hopedale	10.86	8.00	6.26	4.00	8.62	9.00	
Chas. M. Cox Co., Boston, Mass.								
Charlestock, ..Horvitz Grain Co.	New Bedford	7.71	6.00	4.55	3.00	17.15	16.00	Oat feed, oat meal by-products, (oat shorts, oat middlings, oat hulls) hominy or corn meal and ⅓ of 1% salt
Wirthmore,....Eastern Grain Co.	Bridgewater	9.28	9.00	6.43	4.00	5.55	9.50	Ground barley, ground oats, hominy meal, ground corn, oat meal by-products (oat middlings, oat shorts, oat hulls) and ⅓ of 1% salt.
Wirthmore,.....W. E. Bryant & Co.	Brockton	10.68	9.00	6.87	4.00	8.60	9.50	
Wirthmore,....Prentiss, Brooks & Co.	Easthampton	10.42	9.00	6.80	4.00	9.56	9.50	
Wirthmore,.....Haverhill Milling Co.	Haverhill	9.89	9.00	6.93	4.00	9.01	9.50	
Wirthmore,....Bowen & Fuller	Leominster	10.33	9.00	6.69	4.00	9.74	9.50	
Wirthmore,.....Robinson & Jones Co.	Natick	9.72	9.00	6.53	4.00	8.42	9.50	
Wirthmore,.....E. C. Frost	Shelburne Falls	10.59	9.00	7.42	4.00	9.34	9.50	
Wirthmore,.....F. Diehl & Son	Wellesley	9.77	9.00	5.81	4.00	10.33	9.50	
Wirthmore,....C. G. Jordan	Weymouth	9.98	9.00	7.08	4.00	8.17	9.50	
Wirthmore,.....C. G. Jordan	Weymouth	10.29	9.00	7.50	4.00	8.79	9.50	
Wirthmore,.....Whitman Coal & Grain Co.	Whitman	11.03	9.00	7.96	4.00	7.28	9.50	

STOCKS AND HORSE FEEDS.—(*Continued*

Manufacturer or Jobber Brand and Retailer	Sampled at	Protein. Found	Protein. Guar.	Fat. Found	Fat. Guar.	Fiber. Found	Fiber. Guar.	Certified Ingredients
		%	%	%	%	%	%	
F. W. Dorr Co., Newton Center, Mass								
Matchless. . . . . F. W. Dorr Co. .	Newton Center. .	10.47	10.00	5.33	4.00	7.60	12.00	Ground barley, ground oats, hominy meal, ground corn, oat meal by-products (oat middlings, oat shorts, oat hulls),
Matchless. . . . . . F. W. Dorr Co. .	Newton Center	8.93	10.00	6.23	4.00	8.57	12.00	
Elmore Milling Co., Oneonta, N. Y.								
Stock Feed. . . . . F. W. Eaton & Co	Williamstown	10.42	10.00	4.02	4.00	11.11	12.00	Corn meal, hominy meal, dried brewers' grains wheat bran, salt, oat meal mill by products (oat hulls, oat middlings, oat shorts)
J. B. Garland & Son., Worcester, Mass.								
Red Tag A. . . . . G. W. King.	. Charlton	11.12	7.00	4.19	3.00	10.08	14.00	Corn, wheat middlings, barley, oat feed and grain screenings
Red Tag A. . . . Reed Grain Co.	. Charlton	14.10	7.00	3.68	3.00	6.62	14.00	
Red Tag A. . . . . J. B. Garland & Son. .	. Worcester.	12.83	7.00	5.24	3.00	12.07	14.00	
Red Tag A. . . . J. B. Garland & Son. .	. Worcester.	10.94	7.00	4.88	3.00	11.45	14.00	
Red Tag B. . . . H. W. Kimball . .	. Westboro.	10.12	7.00	6.34	3.00	12.21	16.00	Corn, wheat middlings, oat feed and screenings
Red Tag B. . . J. B. Garland & Son	. . Worcester.	9.98	7.00	4.28	3.00	12.27	16.00	
Red Tag B. . . . J. B. Garland & Son	. Worcester .	11.82	7.00	3.74	3.00	12.88	16.00	
D. H. Grandin Milling Co., Jamestown, N. Y.								
Grandin's. . . W. P. Henry.	. . Beverly. . .	10.51	8.50	7.23	4.00	10.09	13.00	Hominy feed, oat meal mill by-products (oat middlings, oat hulls, oat shorts, salt)
Grandin's. . . J. Cushing & Co.	. New Bedford	9.15	8.50	5.38	4.00	10.95	13.00	
Grandin's. . . Winslow & Mackenzie Co. .	New Bedford.	10.58	8.50	6.84	4.00	9.53	13.00	
Grandin's. . . S. E. Davenport & Son .	N. Grafton. . . .	10.12	8.50	7.43	4.00	11.19	13.00	
Grandin's. . . . . Hubbard Mills	. . Newton Highlands	9.37	8.50	6.75	4.00	11.03	13.00	
Grandin's. . . Rogers Bros. .	Salem.	10.47	8.50	7.10	4.00	9.50	13.00	
Grandin's. . . H. C. Parker Co. .	. Springfield. . .	11.03	8.50	6.85	4.00	9.95	13.00	
Grandin's. . . Taunton Grain Co. . . .	. Taunton . .	9.94	8.50	7.58	4.00	10.00	13.00	
Grandin's. . . H. G. Hill & Co. . . .	Williamsburg . .	10.20	8.50	7.61	4.00	8.75	13.00	
Grandin's. . . A. N. Whittemore & Co. .	Worcester	10.56	8.50	6.71	4.00	9.92	13.00	
W. H. Haskell Co., Toledo, Ohio								
Haskell's. . . Rolstone Grain Co.	Fitchburg.	11.52	8.00	7.81	4.00	6.98	8.00	Ground corn, ground oats, hominy feed, oat hulls, oat shorts and salt
Haskell's. . . . Hingham Grain Mill	. Hingham. . . .	9.23	8.00	6.58	4.00	9.20	8.00	
Haskell's. . . W. G. Horton.	. Ipswich.	10.82	8.00	6.95	4.00	6.54	8.00	
Haskell's. . . . City Grain Co.	. . Marlboro	10.94	8.00	8.30	4.00	8.48	8.00	
Haskell's . . Robinson & Jones Co. .	. Natick . .	9.37	8.00	6.07	4.00	7.92	8.00	
Haskell's, . . . Winslow & MacKenzie Co.	. New Bedford . .	11.99	8.00	8.48	4.00	6.71	8.00	
Haskell's, . . Cummings & Chute. . .	. Woburn. . .	10.86	8.00	7.80	4.00	8.60	8.00	

STOCK AND HORSE FEEDS. (*Continued*)

Manufacturer, Jobber, Brand and Retailer	Sampled at	Protein.		Fat		Fiber.		Certified Ingredients
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Meech & Stoddard, Middletown, Conn.								
M. & S. Stock,. . J. Franks. . .	New Bedford. . . .	10.24	9.00	5.98	3.00	8.48	12.00	Ground oat hulls and white hominy feed
M. & S. Stock,. . Weld & Beck	Southbridge.	7.01	9.00	5.23	3.00	13.71	12.00	
M. & S. Stock,. . J. Franks.	S. Dartmouth. . .	10.24	9.00	5.77	3.00	7.05	12.00	
Nowak Milling Corp., Buffalo, N. Y.								
Justice Stock,. . A. Dodge & Sons.	Beverly.	9.11	10.00	3.90	3.00	10.14	9.00	Ground oats, corn feed meal, wheat middlings, oat hulls, clipped oat by-product, ground grain screenings, ½ of 1% salt.
Justice Stock,. . . A. Dodge & Sons. . .	Beverly.	11.78	10.00	5.72	3.00	3.63	9.00	
Justice Stock,. . Foster Grain Co.	Lowell.	9.72	10.00	4.02	3.00	11.08	9.00	
Justice Stock,. . . Foster Grain Co. . . .	Lowell.	10.86	10.00	5.38	3.00	5.56	9.00	
Park & Pollard Co., Boston, Mass.								
Stock Feed,. . . W. B. Herrick.	Beverly.	10.59	9.00	4.53	3.00	8.05	12.00	Corn meal, hominy feed, oat feed.
Stock Feed,. . . Knight Grain Co	Newburyport. . . .	9.81	9.00	4.19	3.00	7.30	12.00	
Stock Feed,. . . Glen Mills Cereal Co. . . .	Rowley.	9.02	9.00	4.20	3.00	10.07	12.00	
Stock Feed,. . . . Stanley Wood Grain Co	Taunton.	8.58	9.00	3.85	3.00	7.85	12.00	
Purity Oats Co., Davenport, Iowa								
Iowa Stock,. . . . W. B. Herrick.	Beverly.	10.59	10.00	5.00	4.00	9.80	12.75	Wheat middlings, corn meal, hominy feed, brewers' grains, oat meal mill by-products, (oat shorts, oat hulls and oat middlings) and 1% salt.
Iowa Stock,. . . Pierre Guay.	New Bedford. . . .	10.68	10.00	5.13	4.00	10.83	12.75	
Quaker Oats Co., Chicago, Ill.								
Boss Feed, G. F Wetherbee Co. .	Gardner. . .	7.71	8.00	2.96	3.00	11.61	12.00	Ground corn, hominy feed, oat meal mill by-product (oat middlings, oat hulls, oat shorts) and ½ of 1% salt.
Schumacher Feed, MacKenzie & Winslow. .	Fall River.	9.81	8.00	3.43	3.00	9.92	12.00	Ground corn, hominy feed, ground barley, wheat flour, wheat middlings, cottonseed meal, oat meal mill by-products (oat middlings, oat, hulls, oat shorts) grd. puffed rice and wheat, ½ of 1% salt.
Schumacher Feed, Highland Mills. . . .	Newton Hi'lands.	10.16	8.00	4.09	3.00	11.65	12.00	
Schumacher Sp'c'l. G. W. Reynolds & Co.	Chelsea.	10.12	9.25	3.69	3.25	8.88	8.00	Ground corn, crushed oats, oat meal mill by-products, (oat middlings, oat hulls, oat shorts) ½ of 1% salt.
Schumacher Sp'c'l. Wallace Grain Co. . .	Clinton.	9.28	9.25	3.40	3.25	11.49	8.00	
Schumacher Sp'c'l. Butman & Cressy. . . .	Lynn.	9.68	9.25	3.28	3.25	7.10	8.00	

STOCK AND HORSE FEEDS.—*(Continued)*

Manufacturer or Jobber, Brand and Retailer.		Protein.		Fat.		Fiber.		Certified Ingredients,
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Quaker Oats Co., Chicago, Ill.								
Victor Feed, Howe Bros	Gardner	8.23	8.00	3.24	3.00	11.41	12.00	Ground corn, hominy feed, oat meal mill by-product (oat middlings, oat hulls, oat shorts) ½ of 1% salt
Victor Feed, C. A. Pierce	Hinsdale	8.58	8.00	3.56	3.00	13.23	12.00	
Victor Feed, J. S. Wolfe & Co.	Pittsfield	10.51	8.00	5.98	3.00	12.05	12.00	
Victor Feed, Ropes Bros	Salem	8.89	8.00	3.25	3.00	9.40	12.00	
Victor Feed, Ropes Bros	Salem	9.02	8.00	4.42	3.00	11.72	12.00	
White Diamond Marlboro Grain Co.	Marlboro	8.41	8.00	3.02	3.25	10.49	9.00	
White Diamond. C. L. Marsh	Webster	8.72	8.00	3.15	3.25	7.88	9.00	
Strafford-York Grain Co., Somersworth, N. H.								
Economy, Stanley, Harlow & Woodlock Co.	Chelsea	10.20	9.00	5.98	4.00	7.09	12.00	Flour middlings, oats, corn, hominy feed, oat hulls, oat groats, ½ of 1% salt
Economy, J. O. Ellison & Co.	Haverhill	8.14	9.00	2.78	4.00	11.26	12.00	
Syracuse Milling Co. Syracuse, N. Y.								
Syragold, Berkshire Coal & Grain Co.	Pittsfield	9.94	10.00	2.69	3.00	12.11	12.00	Ground corn, oats, barley, oat hulls, oat middlings, hominy feed, cottonseed meal, salt.
H. K. Webster Co., Lawrence, Mass.								
Blue Seal Horse, H. K. Webster Co.	Lawrence	12.87	11.00	5.63	5.00	6.93	8.00	Oats, barley, hominy feed, corn, wheat bran, gluten feed, linseed meal and not over ½% salt.
John J. White, Boston, Mass.								
Stock Feed, John J. White	Boston	9.94	10.00	4.56	4.00	12.40	13.50	Corn meal and oat feed.
M. G. Williams, Taunton, Mass.								
Williams Stock, M. G. Williams	Taunton	14.50	11.00	5.30	4.00	10.03	12.00	Hominy feed, cottonseed meal, oat hulls, ground barley, red dog flour, ground corn screenings and salt.
Williams Stock, M. G. Williams	Taunton	14.32	11.00	4.77	4.00	10.47	12.00	

MOLASSES FEEDS.—(Less than 15% Protein.)

Manufacturer, Jobber, Brand and Retailer	Sampled at	Protein. Found	Protein. Guar	Fat. Found	Fat. Guar.	Fiber. Found	Fiber. Guar.	Certified Ingredients
		%	%	%	%	%	%	
American Milling Co., Peoria, Ill.								
Success Horse with Alfalfa. . . . . . A. N. Whittemore & Co.	Worcester	9.62	10.00	2.60	2.50	10.26	12.00	Molasses, alfalfa, corn, oats
Buffalo Cereal Co., Buffalo, N. Y.								
Iroquois Horse, ... Griffin Bros. . . .	Fall River.	9.09	9.00	1.93	2.00	10.31	11.00	Ground corn and oats, crushed oats, alfalfa meal, oat middlings, oat hulls, oat shorts and molasses.
Iroquois Stock. . . . Plummer & Jennings Co. .	New Bedford .	8.83	8.00	4.12	3.00	8.41	11.00	
Cloverleaf Milling Co. Buffalo, N. Y.								
Cloverleaf Horse, . . . Cutler Grain Co.	S. Framingham. .	9.90	10.00	2.13	2.00	12.24	12.00	Cracked corn, crushed oats, alfalfa meal, molasses and ½ of 1% salt.
Dwight E. Hamlin, Pittsburg, Pa.								
P. & S. . . . Stanley, Harlow, Hamlin, Inc. . . .	Charlestown.	13.23	14.00	3.96	3.50	8.53	16.00	Crushed flaxseed meal, old process linseed oil meal, alfalfa meal, dried brewers' and distillers' grains, cane syrup, ½ of 1% salt.
H. & S., . . Stanley, Harlow & Woodlock Co. .	Chelsea	14.46	14.00	3.80	3.50	11.37	16.00	
Quality, . . Stanley, Harlow, Hamlin, Inc	Charlestown.	10.01	9.00	1.57	2.00	11.28	10.00	Corn, oats, alfalfa and cane syrup
Quality, . . Stanley, Harlow & Woodlock Co. .	Chelsea . . .	10.52	9.00	1.64	2.00	11.42	10.00	
Quality, . . S. L. Davenport & Son . .	N. Grafton	9.05	9.00	1.33	2.00	13.32	10.00	
H-O Co., Buffalo, N. Y.								
Algrane Horse, . . . J. O. Ellison & Co. .	Haverhill. .	11.04	11.00	4.17	4.00	8.83	10.00	Oat hulls, crushed oats, wheat middlings, molasses, oat shorts, hominy feed, ground grain screenings, ground corn, corn gluten feed, ½ of 1% salt.
Algrane Horse, . . . Lenox Coal & Grain Co. . .	Lenoxdale.	11.30	11.00	3.45	4.00	8.05	10.00	
Algrane Horse, . . Boston Coal & Grain Co.	Norwood	11.56	11.00	4.30	4.00	9.30	10.00	
Horse Feed with Alfalfa. . . . G. F. Green Coal Co. . .	Campello	10.47	11.00	2.87	3.00	11.30	10.00	Alfalfa meal, molasses, wheat middlings, ground corn, corn gluten feed, ground grain screenings, oat hulls, oat shorts, ⅓ of 1% salt.
N. E. Stock. . . . . H. K. Webster Co. . .	Lawrence	9.86	9.00	4.53	4.00	10.80	10.00	Ground corn, ground oats, ground grain screenings, hominy feed, oat hulls, wheat middlings, oat shorts, molasses, ½ of 1% salt.
Kornfalfa Feed Milling Co., Kansas City, Mo.								
Kornfalfa Horse, . . W. B. Herrick	Beverly .	10.41	9.00	2.14	2.50	7.84	12.00	Corn, oats, alfalfa and molasses.
Kornfalfa Kandy, . Sumner Crosby & Son . . .	Boston .	11.31	9.00	1.85	2.50	11.24	12.00	
Nowak Milling Corp., Buffalo, N. Y.								
Pure-M-Lasses, . . Foster Grain Co.	Lowell.	9.70	8.00	2.41	2.00	13.20	9.00	Crushed oats, cracked corn, corn feed meal, wheat bran, molasses, ¾ of 1% salt.
Vim-O-Lene, ... A. Dodge & Sons.	Beverly	9.42	8.00	4.17	2.00	5.27	9.00	Crushed oats, cracked corn, corn feed meal, wheat bran, molasses, ¾ of 1% salt.
Vim-O-Lene, ... G. B. Brown.	Ipswich	9.93	8.00	3.69	2.00	5.33	9.00	
Vim-O-Lene, ... G. B. Brown.	Ipswich	10.16	8.00	4.07	2.00	6.33	9.00	

MOLASSES FEEDS.—(Less than 15% Protein.)—(*Continued.*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Omaha Alfalfa Milling Co., Omaha, Neb.								
Alcorno,..........Highland Mills...	Newton Hi'lands.	10.72	10.00	2.15	2.00	10.78	12.00	Corn, oats, alfalfa meal, molasses
Green Meadow,....Bond Grain Co...	Charlton..	8.37	11.00	0.60	1.00	15.27	25.00	Alfalfa meal, molasses
Green Meadow,....Bond Grain Co.	Charlton........	9.61	11.00	1.03	1.00	17.29	25.00	
Park & Pollard Co., Boston, Mass.								
Horse Feed,........Highland Mills..........	Newton Hi'lands	10.63	9.00	1.77	2.50	15.60	12.00	Alfalfa, corn, oats, molasses, salt
Horse Feed,........W. Livingston..........	Lowell..........	11.23	9.00	1.79	2.50	14.37	12.00	
M. C. Peters Mill Co., Omaha, Neb.								
Arab,.............G. W. Reynolds & Son...	Chelsea..	10.96	9.00	2.21	2.00	9.79	15.00	Corn, oats, alfalfa, molasses
Arab,.............Ropes Bros...........	Salem..........	10.16	9.00	1.90	2.00	13.95	15.00	
Re-Peter,.........Sumner Crosby & Sons...	Boston....	10.27	9.00	1.60	1.50	10.95	18.00	
Re-Peter,.........Ropes Bros......	Salem	11.09	9.00	1.71	1.50	11.57	18.00	
Quaker Oats Co., Chicago, Ill.								
Green Cross,.......G. W. Reynolds & Son...	Chelsea........	10.31	10.00	2.12	2.50	11.41	12.00	Alfalfa meal, ground corn, crushed oats, cottonseed meal, molasses, oat meal mill by-product (oat middlings, oat hulls, oat shorts.)
Green Cross,.......Lexington Grain Co.....	Lexington.......	9.63	10.00	2.24	2.50	12.26	12.00	
Green Cross,.....G. R. Doane......	N. Brookfield....	10.65	10.00	2.16	2.50	12.45	12.00	
Green Cross,.....A. Milot & Son.........	Taunton.......	10.76	10.00	2.41	2.50	11.01	12.00	
Green Cross,.....W. W. Holmes..........	Webster........	8.87	10.00	2.63	2.50	9.96	12.00	
Green Cross,.....F. Diehl & Son.....	Wellesley.. ...	10.36	10.00	2.43	2.50	11.28	12.00	
Horse Power,.....Marlboro Grain Co....	Marlboro..	11.09	10.00	2.26	2.80	12.57	11.00	Ground corn, crushed oats, new process linseed oil meal, oat meal mill by-products (oat middlings, oat hulls, oat shorts) and molasses
Horse Power,.....C. L. Marsh....... ...	Webster.........	11.04	10.00	2.56	2.80	11.11	11.00	
Quaker Dairy,.....G. R. Doane.	N. Brookfield....	13.32	16.00	4.51	4.00	15.61	14.50	Molasses, malt sprouts, cottonseed meal, ground grain screenings, new process linseed oil meal, oat meal mill by-product (oat middlings, oat hulls, oat shorts).
Ralston Purina Co., Buffalo, N. Y.								
Good Luck,.......Berkshire Coal & Gr. Co.	Pittsfield.. ...	9.58	9.00	1.97	1.50	11.46	12.00	Corn, oats, alfalfa, molasses and 1% salt
Purina Feed with Mol, W. F. Bryant & Co...	Brockton..	8.90	9.30	2.69	1.70	7.02	11.70	Corn, oats, alfalfa, molasses and 1% salt
Purina Feed with Mol, C. F. Pease........	Chester........	8.86	9.30	2.29	1.70	9.45	11.70	
Purina Feed with Mol, Prentiss, Brooks & Co	Easthampton....	9.27	9.30	2.48	1.70	9.46	11.70	
Purina Feed with Mol, J. Cushing & Co.....	Hudson.........	8.61	9.30	2.55	1.70	9.57	11.70	
Purina Feed with Mol, Record & Cote.......	New Bedford....	10.20	9.30	2.47	1.70	9.15	11.70	
Purina Feed with Mol, Sprague & Williams...	S. Framingham..	10.20	9.30	2.69	1.70	9.60	11.70	
Purina Sweet,.....C. F. **Pease**......	Chester........	10.12	9.00	1.34	1.00	18.66	18.00	Alfalfa, molasses and 1% salt.

MOLASSES FEEDS.—(Less than 15% Protein.)—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Republic Milling Co., East St. Louis, Ill.								
Republic Horse, . . F. W. Dorr Co.	Newton Center	9.84	9.00	2.67	2.00	15.12	12.00	Corn, oats, alfalfa, cane molasses, salt.
Stanley, Harlow, Hamlin, Inc., Charlestown, Mass.								
Go To It, . . Stanley, Harlow, Hamlin, Inc.	Charlestown	9.06	9.00	2.29	2.00	12.72	16.00	Crushed oats, barley, corn and cob meal, dried distillers' and yeast grains, alfalfa, cane syrup, salt.
Go To It, . . H. Bruckman	S. Lawrence	9.49	9.00	1.89	2.00	13.57	16.00	
Hobo, . . Stanley, Harlow, Hamlin, Inc.	Charlestown	13.08	8.00	4.05	1.50	13.60	14.00	Dried brewers', yeast and distillers' grains, alfalfa, cane syrup, salt.
Hobo, . . H. Bruckman	S. Lawrence	12.81	8.00	2.90	1.50	12.17	14.00	
Xtravim Molasses Feed Co., Boston, Mass.								
Xtravim, . . W. N. Potter Sons & Co.	Hadley	4.48	4.61	0.50	0.81	5.88	4.50	Cane molasses, sphagnum moss.
Xtravim, . . Beaver Coal & Grain Co.	Norwood	3.79	4.61	0.56	0.81	5.18	4.50	
Xtravim, . . C. B. Sawin & Son	Southboro	4.20	4.61	0.51	0.81	5.07	4.50	
Xtravim, . . A. J. Richards & Son	Weymouth	3.62	4.61	0.59	0.81	5.56	4.50	

MISCELLANEOUS FEEDS.

Manufacturer or Jobber, Brand and Retailer.	Sampled at	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Fiber Found	Fiber Guar.	Certified Ingredients.
J. Bibby & Sons, Liverpool, Eng.								
P[illegible] Meal, . . J. H. Sargent & Co.	Watertown	14.45	12.00	2.81	4.00	9.47	10.00	Corn, wheat middlings, rice polish, sago meal, tapioca meal, peanut cake, palm kernel cake, locust beans, molasses, salt
A. H. Brown & Bros., Boston, Mass.								
Dried Grains, . . Lexington Grain Co.	Lexington	12.52	10.00	4.15	2.50	16.01	20.00	Refuse from manufacture of infant's food prepared from malt flour and bran.
Indiana Milling Co., Terre Haute, Ind.								
Sterling Feed, . . W. J. Meek	Fall River	10.21	10.00	2.97	3.00	14.90	16.00	Ground corn and cob and wheat bran with mill run ground screenings
Sterling Feed, . . Guay Bros.	New Bedford	10.24	10.00	3.28	3.00	16.20	16.00	
Sterling Feed, . . W. J. Meek	Fall River	9.54	10.00	3.71	3.00	15.80	16.00	
Lanier Bros., Nashville, Tenn.								
Ri-Co Feed, . . Stanley, Harlow, Hamlin, Inc.	Charlestown	12.96	13.00	14.00	14.00	12.05	9.00	Rice feed
A. Waller & Co., Henderson, Ky.								
Blue Grass Valley Feed, Plummer & Jennings	New Bedford	10.29	9.00	3.70	2.00	15.73	17.00	Wheat bran and middlings, ground corn and cob
Blue Grass Valley Feed, W. B. Herrick	Beverly	10.73	9.00	2.94	2.00	16.22	17.00	
Blue Grass Valley Feed, W. B. Herrick	Beverly	11.47	9.00	2.79	2.00	14.45	17.00	

POULTRY FEEDS
ANIMAL PRODUCTS.

Manufacturer or Jobber, Brand and Retailer	Sampled at	Protein. Found	Protein. Guar.	Fat. Found	Fat. Guar.	Phosphoric Acid	Bone Estimated
		%	%	%	%	%	%
American Agri. Chem. Co., Boston, Mass.							
G'd. Meat Scraps, F. H. Crane & Sons	[illegible]	63.74	45.00	11.12	10.50	4.74	1[illegible]
Andrews & Spellman, Providence, R. I.							
Ideal No. 1 Meat Scrap, A. H. Wood & Co.	[illegible]	55.00	50.00	11.[illegible]	10.00	6.38	1[illegible]
E. G. Baker & Son, Providence, R. I.							
Perfection Poultry Food, G. Nichols	Rehoboth	42.91	40.00	14.65	10.00	10.02	36
Beach Soap Co., Lawrence, Mass.							
Star Meat & Bone Meal, Bowen & Fuller	Leominster	26.71	30.00	[illegible]	15.00	21.15	83
Star Meat & Bone Meal, Milford Grain Co.	Milford	[illegible]	30.00	5.[illegible]	15.00	20.[illegible]	7[illegible]
Joseph Breck & Sons, Boston, Mass.							
G'd. Beef Scraps, M. H. Rolfe Est.	[illegible]	40.37	45.00	14.33	12.00	10.[illegible]	3[illegible]
Butcher's Rendering Co., Fall River, Mass.							
Poultry Food, Meat Scrap, MacKenzie & Winslow	Fall River	77.20	60.00	11.73	11.00	2.[illegible]5	
Poultry Food, Meat Scrap, Mansfield Coal & Gr. Co.	Mansfield	72.86	60.00	13.43	12.00	2.93	[illegible]
Dewey Bros Co., Blanchester, Ohio							
60% Digester Tankage, L. J. Rowell	Pepperell	60.86	60.00	13.41	8.00	5.13	1[illegible]
J. B. Garland & Son, Worcester, Mass.							
Beef Scraps, F. Diehl & Son	Wellesley	54.20	40.00	12.66	10.00	8.79	31
Green Chicken Feed Co., Marblehead, Mass.							
Old Fashioned Meat Scrap, J. Cushing & Co.	Fitchburg	32.75	35.00	8.62	5.00	13.83	53
Old Fashioned Meat Scrap, J. W. Doon & Son	Natick	35.64	35.00	10.10	5.00	14.56	5[illegible]
W. D. Higgins, So. Framingham, Mass.							
"A No. 1" Meat Scrap, A. H. Wood & Co	Framingham	37.59	45.00	17.83	12.00	12.74	48
Hinckley Rendering Co., Somerville, Mass.							
Pltry. Food, Mt. & Bone, Eastern Grain Co.	Bridgewater	41.03	35.00	9.89	8.00	12.91	49
Pltry. Food, Mt. & Bone, J. W. Day & Co.	Lynn	40.81	35.00	11.82	8.00	12.60	47
Lowell Fertilizer Co., Boston, Mass.							
Bone and Meat Meal, M. G. Williams	Taunton	58.49	35.00	5.50	10.00	8.16	25
Pltry. Food, Meat & Bone, M. G. Williams	Taunton	56.79	40.00	8.63	8.00	7.80	77
A. G. Markham & Co., Springfield, Mass.							
Beef Scrap, J. E. Merrick & Co	Amherst	40.54	45.00	9.39	10.00	13.62	52
Geo. E. Marsh Co., Lynn, Mass.							
Meat Scraps, A. H. Wood & Co	Framingham	41.94	40.00	9.78	10.00	12.04	45
Meat Scraps, Hingham Grain Mill	Hingham	40.54	40.00	10.57	10.00	11.20	42
Spl. Mt. Scraps, J. W. Day & Co.	Lynn	53.15	55.00	12.06	15.00	8.39	30
Park & Pollard Co., Boston, Mass.							
Blue Ribbon Meat Scraps, Rollstone Grain Co.	Fitchburg	37.39	45.00	10.14	13.00	10.86	40
Quaker City Mfg. Co., Philadelphia, Pa.							
Mt. & Bone Scraps, Mansfield Milling Co.	Mansfield	39.84	40.00	11.14	10.00	14.01	54
Mt. & Bone Scraps, A. Culver Co.	Rockland	46.93	40.00	13.87	10.00	[illegible].20	33
Richmond Abattoir, Richmond, Va.							
Rava Mt. Meal, Lexington Grain Co.	Lexington	83.58	35.00 •	6.21	7.00	1.40	9.60
Ropes Bros., Salem, Mass.							
Gd. Scraps, Ropes Bros	Salem	38.53	40.00	9.86	10.00	11.99	45
N. Roy & Sons, So. Attleboro, Mass.							
Steamed Meat & Bone, MacKenzie & Winslow	Fall River	51.58	45.00	11.00	8.00	9.83	36
Springfield Rendering Co., Springfield, Mass.							
Pltry. Feed, (Mt.&Bone), H. R. Lamb	Brookfield	42.03	40.00	8.75	8.00	15.24	5[illegible]
Pltry. Feed, (Mt.&Bone), L. E. Whitaker	E. Longmeadow	46.32	40.00	9.37	8.00	11.5[illegible]	4[illegible]
J. A. Torrey, Rockland, Mass.							
No. 1 Beef Scrap, A. Culver Co.	Rockland	35.46	38.00	1[illegible]	15.00	12.70	48
No. 1 Beef Scrap, A. Culver Co	Rockland	36.34	38.00	12.60	15.00	13.90	5[illegible]
Whitman & Pratt Rendering Co., Lowell, Mass.							
Beef Scrap, M. G. Williams	Taunton	42.26	45.00	8.40	10.00	1[illegible]	5[illegible]
Ex. Qual. Beef Scr., M. G. Williams	Taunton	59.11	45.00	12.25	10.00	6.[illegible]	26

BONE MEAL.

Manufacturer or Jobber, Brand and Retailer	Sampled at:	Protein.		Fat.		Phosphoric Acid	Bone Estimated
		Found	Guar.	Found	Guar.		
		%	%	%	%	%	%
John C Do Co., Boston, Mass.							
Bone Meal for Cattle,, . . . Cutler Grain Co. . . .	S. Framingham . .	14.89	12.00	9.49	6.00	26.48	
H. L. Warren, Northboro, Mass.							
Cracked Bone, ... J. Cushing & Co. . .	Hudson	29.51	26.00	4.14	2.00	23.76	—
FISH MEAL AND SCRAP.							
International Glue Co., Boston, Mass.							
Red Star Fish Scrap . . . . Lexington Gr. Co . .	Lexington . .	45.53	45.00	2.21	2.00	—	–
Red Star Fish Scrap . . A. Culver Co . .	Rockland. . . .	49.91	45.00	2.22	2.00	15.52	60
Lord Bros. Co., Portland, Me.							
Egg Maker Fish Meal, . . . Berk. Cl. & Gr. Co .	Pittsfield . .	52.67	45.00	0.93	2.50	11.62	43
MILK BY-PRODUCTS.							
George L. Harding, Binghampton, N. Y.							
Uncle Sam Gran. Milk, . . . J. W. Day & Co. . .	Lynn .	49.91	45.00	5.97	6.00	9.01	—
Innis, Spelden Co., Boston, Mass.							
Ego Milk Albumen, ... J. W. Day. & Co. . .	Lynn	44.13	50.00	0.71	1.00	9.49	—

CLOVER MEAL

Manufacturer or Jobber, Brand and Retailer	Sampled at	Protein		Fat.		Fiber.	
		Found	Guar.	Found	Guar	Found ~~Phos-phoric Acid~~	Guar ~~Bone Esti-mated~~
		%	%	%	%	%	%
Joseph Breck & Sons, Boston, Mass.							
Banner Cut Clover, ...H. K. Webster Co.	Lawrence..	10.86	7.91	1.82	3.36	33.49	29.84

ALFALFA MEAL.

Manufacturer or Jobber, Brand and Retailer	Sampled at	Protein Found	Protein Guar.	Fat Found	Fat Guar	Fiber Found	Fiber Guar
Albert Dickinson Co., Chicago, Ill							
J. Cushing & Co	New Bedford	17.04	12.00	2.01	1.00	22.90	35.00
Lovejoy Bros., Berthoud, Col.							
M. H. Rolfe Est	Newburyport	15.33	13.00	1.51	1.00	32.00	30.00
Omaha Alfalfa Milling Co., Omaha, Neb.							
I. J. Rowell..	Pepperell	13.23	12.00	1.63	1.00	28.12	30.00
Park & Pollard Co., Boston, Mass.							
W. B. Herrick.	Beverly	11.99	12.00	1.57	1.50	30.18	30.00
M. C. Peters Mill Co., Omaha, Neb.							
Highland Mills.	Newton Highlands	15.06	12.00	1.28	0.50	27.79	33.00
Somers & Co., San Francisco, Cal.							
Red Star,......W. B. Herrick...	Beverly	13.66	16.00	1.66	1.40	32.53	29.00
Red Star,......Mansfield Milling Co.	Mansfield.. ..	14.54	16.00	1.51	1.40	31.52	29.00
Red Star,......Cutler Grain Co...	S. Framingham..	14.54	16.00	1.58	1.40	31.38	29.00
Red Star,......Jaquith & Co....	Woburn	15.85	16.00	1.66	1.40	30.63	29.00
Sperry Flour Co., Stockton, Cal.							
[illegible]-Harlow & [illegible]	Chelsea	15.59	14.00	2.10	2.50	24.08	28.50
Washco Alfalfa Milling Co., Fort Calhoun, Neb.							
W. S. Harrington.	Adams..	13.23	12.00	1.17	0.50	34.70	35.00
E. J. Woolworth, Kearney, Neb.							
A. H. Wood & Co.	Framingham	14.63	15.00	2.01	2.50	29.50	27.50
A. F. Wood & Co..	Framingham	16.26	15.00	2.05	2.50	29.69	27.50
Butman & Cressey.......	Lynn..	17.74	15.00	2.47	2.50	24.46	27.50

POULTRY MASH AND MEAL.

Manufacturer or Jobber, Brand and Retailer			Protein.		Fat.		Fiber		Certified Ingredients.
			Found	Guar.	Found	Guar	Found	Guar.	
			%	%	%	%	%	%	
Local Mixtures									
Dry Hen Feed...	C. S. Barber	Bernardston...	22.24	19.00	4.16	4.00	9.69	10.00	Oats, alfalfa, gluten feed, wheat bran, linseed oil meal, flour middlings, beef scraps.
Maine Mash	Berkshire Coal & Gr. Co.	N. Adams......	19.79	10.00	5.54	5.00	8.33	--	Corn meal, wheat bran and middlings, gluten feed, linseed oil meal, beef scraps
Maine Mash.	Berkshire Coal & Gr. Co.	Pittsfield......	21.80	10.00	5.21	5.00	7.68	-	
King Mash Feed..	Cutler Grain Co...	S. Framingham..	20.97	19.00	4.58	4.00	8.01	10.00	Wheat bran, cocoanut meal, cottonseed meal, flaxseed meal, locust bean meal, linseed oil meal, pea meal, fenugreek, wheat flour, dried milk, cocoa shells, salt, alfalfa barley, meat and bone meal, corn meal, oat meal, wheat bran and middlings, fish meal, capsicum, limestone grit.
King Mash Feed..	Cutler Grain Co..	W. Brookfield...	20.54	18.00	4.38	3.00	7.71	11.00	
Climax Cream Mash.	J. W. Day & Co...	Lynn..	19.70	21.00	5.20	5.00	5.40	7.00	Corn meal, gluten feed, wheat bran and middlings, beef scraps, bone, alfalfa, dried milk, bone ash, salt.
Climax Cream Mash.	J. W. Day & Co..	Lynn...	20.49	21.00	4.72	5.00	5.83	7.00	
Climax Grow. Feed.	J. W. Day & Co.	Lynn......	16.20	17.00	4.27	4.50	4.08	4.75	Corn meal, hominy feed, oats, wheat bran and middlings, beef scraps, bone, fish, dried milk, bone ash, salt
Climax Grow. Feed	J. W. Day & Co.	Lynn........	18.13	17.00	4.71	4.50	4.69	4.75	
Climax Meat Msh.,	J. W. Day & Co.	Lynn.......	19.44	17.50	3.60	3.50	8.10	8.00	Corn meal, wheat bran, oats, gluten feed, wheat middlings, alfalfa fish, meat scraps, charcoal, oil meal, bone ash, salt.
Climax Meat Msh.	J. W. Day & Co.	Lynn	21.19	17.50	3.50	3.50	8.72	8.00	
Matchless Dry Msh.	F. W. Dorr Co..	Newton...	17.51	16.00	4.23	4.00	10.40	10.00	Wheat mixed feed, corn meal, gluten feed, ground oats, fish scrap, beef scraps, alfalfa.
Matchless Dry Msh.	F. W. Dorr Co..	Newton...	18.48	16.00	4.01	4.00	8.46	10.00	
Poultry Mash.	F. A. Fales & Co.....	Norwood......	20.14	15.00	4.95	4.00	7.44	8.00	Wheat bran and middlings, corn meal, ground oats, gluten feed, alfalfa, beef scraps, fish scraps, linseed meal.
Poultry Mash	S. B. Greene & Co.....	Watertown.....	22.55	20.00	5.17	4.00	7.22	7.00	Meat and fish scraps, wheat bran, gluten feed, linseed meal, corn meal, wheat middlings, alfalfa.
Laying Feed..	W. B. Herrick.	Beverly......	17.95	16.00	4.75	4.00	7.90	7.00	Linseed meal, meat meal, corn meal, gluten feed, beef scraps, wheat bran and middlings, alfalfa meal, charcoal, Hen-E-Ta grit, cottonseed meal, wheat meal.
Laying Feed.	W. B. Herrick.	Beverly.....	16.90	16.00	6.27	4.00	7.73	7.90	
Mash Feed...	Hingham Grain Mill..	Hingham..	18.30	15.00	5.26	4.00	7.90	10.00	Wheat bran and middlings, corn meal, ground oats, gluten feed, meat scraps, alfalfa meal.
Mash Feed..	Hingham Grain Mill.	Hingham..	19.09	15.00	5.33	4.00	8.28	10.00	
Hoosac Valley Dry Mash,	Hoosac Val. Cl. & Gr. Co.	Adams.	14.80	15.00	3.92	4.00	10.47	10.00	Corn meal, wheat bran and middlings, alfalfa meal, gluten feed, beef scraps, bone meal.
Alfalfa Poultry Mash,	Lexington Grain Co...	Lexington....	22.42	15.00	4.91	3.00	6.67	12.00	Alfalfa meal, meat scraps, fish scraps, corn meal, gluten feed, wheat bran and middlings, grain cleanings, salt.
Alfalfa Poultry Mash,	Lexington Grain Co...	Lexington......	22.16	15.00	4.66	3.00	9.32	12.00	

POULTRY MASH AND MEAL.—(*Continued*)

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Little Chick Growing Mash, Lexington Grain Co.	Lexington	20.58	16.00	5.25	3.00	5.26	8.00	Milk albumen, meat meal, hominy meal, corn meal, wheat bran and middlings, linseed meal, bone meal, salt.
Poultry Mash, A. D. Potter	Orange	14.85	15.00	3.82	4.00	7.71	11.00	Hominy feed, oats, gluten feed, linseed meal, wheat feed, alfalfa.
Poultry Mash, W. N. Potter & Sons	Gardner	18.26	15.00	3.97	4.00	9.36	11.00	
Poultry Hash, Ropes Bros	Salem	18.65	13.00	4.62	4.50	6.83	11.00	Shredded wheat refuse, hominy meal, gluten feed, linseed meal, alfalfa meal, wheat mixed feed, rolled oats, bone meal.
Poultry Hash, Ropes Bros	Salem	18.09	13.00	4.67	4.50	8.00	11.00	
Brooks Dry Msh., Stanley Grain Co	Lawrence	23.78	20.00	5.38	4.00	8.56	12.00	Corn meal, wheat bran and middlings, gluten feed, alfalfa, fish scrap, meat scrap, oats, rolled oats, linseed meal.
Brooks Dry Msh., Stanley Grain Co	Lawrence	22.42	20.00	5.79	4.00	8.09	12.00	
Brooks Grow Feed, Stanley Grain Co	Lawrence	18.56	16.00	5.95	4.00	5.42	8.00	Wheat bran and middlings, beef scraps, oats, gluten feed, linseed meal, corn meal, fish scrap, red dog flour
Dry Mash, H. K. Webster Co.	Lawrence	18.26	20.00	3.31	3.00	4.67	10.00	Wheat mixed feed, alfalfa, corn, gluten feed, rolled oats, beef scraps, beet pulp, linseed meal
William's Dry Msh. M. G. Williams	Taunton	22.94	20.00	5.43	4.00	6.71	7.00	Wheat bran and flour middlings, corn meal, ground oats, beef scraps, linseed oil meal, gluten feed
William's Dry Msh. M. G. Williams	Taunton	22.38	20.00	4.97	4.00	5.83	7.00	
W & H Dry Mash, Wilson & Holden	Worcester	19.44	20.00	4.57	3.50	6.93	10.00	Wheat bran and middlings, oats, barley, gluten feed, corn meal, alfalfa meal, linseed meal, meat and bone meal, fish scraps, salt
W-M Co's. Mt. Msh. Winslow & MacKenzie Co.	New Bedford	16.11	15.00	4.87	4.00	6.50	8.00	Oat meal, alfalfa meal, linseed meal, shell, corn meal, charcoal, meat scrap, wheat bran, wheat middlings.
Wood's Pltry. Msh. A. H. Wood & Co	Framingham	25.31	22.00	7.13	6.00	9.28	10.00	Corn meal, ground oats, gluten feed, cottonseed meal, alfalfa meal, beet pulp, wheat bran and middlings, beef scraps, oil meal, fish scrap.
Wood's Pltry. Msh. A. H. Wood & Co	Framingham	24.43	22.00	5.44	6.00	6.95	10.00	
Amendt Milling Co., Monroe, Mich.								
A. M. C. O. Mash, C. L. Marsh	Webster	21.76	15.50	5.27	2.50	6.92	10.00	Wheat bran and middlings, corn feed meal, ground oats, meat scrap, corn gluten feed, linseed oil meal, alfalfa meal, charcoal, ½ of 1%, salt
J. Bibby & Son, Liverpool, Eng.								
Bibby's Pltry. Feed, F. H. Sargent & Co	Watertown	16.42	12.00	6.82	4.00	7.38	10.00	Corn, wheat, rice, sago, tapioca, peanuts, palm kernel, locust beans, molasses, salt, fennel seed.

POULTRY MASH AND MEAL.—*(Continued.)*

Manufacturer, Brand, Dealer and Retailer.	Sampled at.	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Blatchford's Calf Meal Factory, Waukegan, Ill.								
Blatchford's Laying Egg Mash, H. C. Parker Co.	Springfield	21.45	19.00	4.99	4.00	7.94	10.00	Blatchford's calf meal, bone, corn and oat meals, wheat middlings, beef scraps, fish and powdered lime stone.
Milk Mash, W[illegible] & MacKenzie	New Bedford	21.89	20.00	5.30	4.00	6.30	7.50	Blatchford's calf meal, alfalfa, bone, corn and oat meal, wheat bran and middlings, beef scraps, fish, capsicum and powdered limestone
Milk Mash, [illegible] Davenport Co.	N. Grafton	21.41	20.00	4.21	4.00	5.71	7.50	
Milk Mash, Lexington Grain Co.	Lexington	22.07	20.00	3.90	4.00	5.62	7.50	
Buffalo Cereal Co., Buffalo, N. Y.								
Laying Mash, [illegible] Culver Co.	Rockland	20.83	20.00	5.63	5.00	5.35	6.00	Ground corn, oats, wheat and kaffir corn, wheat bran and middlings, linseed meal, alfalfa meal, meat and bone scrap, ½ of 1% salt
Laying Mash, [illegible] Patrick	Hopedale	21.45	20.00	7.59	5.00	4.78	6.00	
Laying Mash, Cummings & Chute	Woburn	20.43	20.00	6.10	5.00	6.40	6.00	
Buttercup Pltry. Mash, F. H. Crane & Sons	Quincy Adams	17.16	15.00	4.96	4.00	5.25	6.00	Ground corn, wheat bran and middlings, hominy feed, gluten feed, oat middlings, rolled oats
Buttercup Pltry. Mash, J. H. Nye	Brockton	16.03	15.00	5.04	4.00	5.14	6.00	
E. A. Cowee Co., Worcester, Mass.								
Climax Chick Feed, L. J. Rowell	Pepperell	15.63	14.00	3.85	4.00	8.38	5.00	Wheat bran and middlings, corn, oats, barley, hominy feed, meat and bone meal, salt, locust bean meal, linseed meal.
Climax Dry Ration, L. J. Rowell	Pepperell	20.14	20.00	4.69	3.50	7.04	10.00	Wheat bran, oats, barley, gluten feed, corn meal, wheat middlings, alfalfa meal, linseed meal, meat and bone meal, fish scraps, salt
Climax Dry Ration, L. J. Rowell	Pepperell	19.96	20.00	4.67	3.50	7.45	10.00	
Chas. M. Cox, Boston, Mass.								
Wirthmore, with Fish and Scrap, Smith Grain Co.	Amesbury	18.91	17.00	4.23	4.00	6.55	9.50	Ground oats and barley, gluten feed, alfalfa meal, wheat bran, ground corn, beef scrap, fish meal, wheat middlings and ¼ of 1% salt.
Wirthmore, with Fish and Scrap, [illegible]	Lawrence	19.81	17.00	2.95	4.00	6.00	9.50	
Wirthmore, with Fish and Scrap, F. H. Crane & Sons	Quincy Adams	13.31	17.00	2.91	4.00	6.03	9.50	
Wirthmore All Grain, Preston, Brown & Co.	Easthampton	14.89	12.00	3.07	3.00	6.77	9.50	Ground oats and barley, gluten feed, alfalfa meal, wheat bran, ground corn, wheat middlings and ¼ of 1% salt.
Elmore Milling Co., Oneonta, N. Y.								
Elmore Egg Mash, W. N. Potter Grain Co.	Gardner	14.32	18.00	4.52	4.00	7.33	8.00	Corn meal, rolled oats, ground barley, wheat flour middlings, hominy feed, wheat bran meat and bone meal, corn gluten feed, alfalfa meal, old process oil meal, salt.
Elmore Egg Mash, W. Lord	Athol	19.79	13.00	4.63	4.00	6.75	8.00	

POULTRY MASH AND MEAL.—*(Continued)*

Manufacturer or Jobber, Brand and Retailer.	Sampled at:	Protein.		Fat.		Fiber.		Certified Ingredients.
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Globe Elevator Co., Buffalo, N. Y.								
Blue Ribbon Mash, E. J. Adams	Gt. Barrington	21.45	20.00	4.59	3.00	7.56	10.00	Wheat bran and middlings, wheat flour ground oats, corn meal, gluten feed, pea meal alfalfa, linseed meal, fish scrap, meat meal ground bone.
Greene Chicken Feed Co., Marblehead, Mass.								
5% Meat Mash, Glen Mills Cereal Co.	Rowley	15.68	12.00	5.26	3.00	6.21	7.00	Meat scraps, corn meal, wheat, shell lime, flax screenings, oats, wheat bran, alfalfa, salt
Wm. S. Hills Co. Boston, Mass.								
Purity Grow. Feed, C. G. Jordan	Weymouth	21.85	19.00	7.95	6.00	5.67	9.00	Fish meal, oat meal, corn meal, hominy feed wheat middlings, beef scraps.
Purity Grow. Feed, W. B. Herrick	Beverly	20.36	19.00	6.58	6.00	5.67	9.00	
Purity Pltry. Msh., C. G. Jordan	Weymouth	17.16	17.00	5.75	4.00	6.00	10.00	Beef scraps, fish meal, alfalfa, wheat bran corn, oat products and wheat middlings.
H-O Co., Buffalo, N. Y.								
Dry Poultry Mash, Beaver Coal & Grain Co.	Norwood	19.61	18.00	4.55	3.50	10.81	9.00	Oat middlings, rolled oats hominy feed. ground grain screenings, corn gluten feed, alfalfa, cracked wheat, wheat middlings. ground corn, wheat bran.
H-O Poultry Feed, G. F. Greene Coal Co.	Campello	18.83	17.00	4.55	4.50	6.05	9.00	Ground corn, corn gluten feed, wheat bran and middlings, oat middlings, hominy feed rolled oats, ground peas, ground grain screenings, molasses.
H-O Poultry Feed, H. K. Webster Co.	Lawrence	18.09	17.00	4.70	4.50	5.83	9.00	
H-O Poultry Feed, Lenox Coal Co.	Lenoxdale	19.26	17.00	4.57	4.50	6.34	9.00	
H-O Poultry Feed, Lenox Coal & Grain Co.	Lenoxdale	17.39	17.00	4.96	4.50	6.77	9.00	
H-O Poultry Feed, Beaver Coal & Grain Co.	Norwood	18.21	17.00	4.86	4.50	7.31	9.00	
Mansfield Milling Co., Mansfield, Mass.								
Chick Grow. Feed, A. Culver Co.	Rockland	18.96	17.50	4.00	4.00	5.98	8.00	Wheat bran, red dog flour, corn meal, meat scraps, alfalfa, oat meal, and charcoal
Mansfield Dry Msh. Mansfield Milling Co.	Mansfield	20.93	22.00	5.99	6.00	7.48	7.00	Wheat bran and middlings, corn meal, red dog flour, gluten feed, alfalfa, meat scraps
Mansfield Dry Msh Winslow & MacKenzie.	New Bedford	20.84	22.09	6.90	6.00	7.23	7.00	
Nowak Milling Co., Buffalo, N. Y.								
Justice Grow. Msh., A. Dodge & Sons	Beverly	16.60	15.00	3.80	6.00	5.73	7.00	Oat meal, corn gluten feed, linseed oil meal corn feed meal, wheat bran and middlings
Justice Lay Msh., Foster Grain Co.	Lowell	20.31	20.00	6.15	3.00	6.36	10.00	Linseed meal, ground oats, wheat flour, wheat bran and middlings, corn feed meal, corn gluten feed, alfalfa meal, ground bone and meat scrap
Lay-Eg-O Dry Msh. A. Dodge & Sons	Beverly	13.66	12.00	2.43	3.00	4.68	4.00	Corn feed meal, corn gluten feed wheat bran and middlings, Hen-E-Ta grits.
Lay-Eg-O Dry Msh G. B. Brown	Ipswich	12.78	12.00	2.83	3.00	4.66	4.00	
Lay-Eg-O Dry Msh Foster Grain Co.	Lowell	12.87	12.00	2.47	3.00	4.32	4.00	

POULTRY MASH AND MEAL. (Continued)

Manufacturer, Jobber, Brand and Retailer	Sampled at	Protein.		Fat		Fiber		[illegible] Ingredients
		Found	Guar.	Found	Guar.	Found	Guar.	
		%	%	%	%	%	%	
Park & Pollard Co., Boston, Mass.								
Growing Feed, W. B. Herrick	Beverly	14.45	10.00	3.29	3.50	5.80	8.00	Ground corn, wheat, barley, oats, meat, bone, alfalfa, Kafir corn, wheat bran and middlings, buckwheat, beet pulp, calcium carbonate and salt.
Growing Feed, W. B. Herrick	Beverly	15.41	10.00	2.08	3.50	4.39	8.00	
Growing Feed, J. W. Dixon & Son	Natick	16.07	10.00	7.03	3.50	4.29	8.00	
Lay or Bust Dry Mash, MacKenzie & Winslow	Fall River	20.14	18.00	4.38	3.50	6.73	12.00	Ground wheat bran and middlings, corn, wheat, oats, barley, Kafir corn, buckwheat, alfalfa, [illegible], meat, bone, beet pulp, calcium carbonate and salt.
Lay or Bust Dry Mash, A. J. Richards	Weymouth	15.41	18.00	4.39	3.50	8.69	12.00	
Arthur E. Pratt Co., Albany, N. Y.								
Champion Egg Msh. John Shea	Lawrence	14.80	13.00	3.97	2.00	4.50	4.00	Corn meal, corn gluten feed, wheat bran and middlings, old process linseed meal, beef scraps, Hen-e-ta grits.
Pratt Food Co., Philadelphia, Pa.								
Baby Chick Food, Wm. C. Brett	N. Abington	12.78	12.00	7.68	4.00	2.38	3.00	Hulled oats, corn meal, wheat middlings, Epsom salts, bone meal, cooked wheat, pepper, gentian, millet, ginger, rape, caraway, shell meal.
Quaker Oats Co., Chicago, Ill.								
Quaker Pltry. Msh. W. J. Meek	Fall River	18.39	17.50	5.43	4.00	6.39	10.00	Meat scraps, oat meal, wheat bran, alfalfa corn, feed meal, corn gluten feed, ground grain screenings.
Quaker Pltry. Msh. I. S. Wolfe	Pittsfield	19.26	17.50	5.93	4.00	7.84	10.00	
Quaker Pltry. Msh. G. Methe & Son	Springfield	20.31	17.50	5.15	4.00	5.34	10.00	
Ralston Purina Co., St. Louis, Mo.								
Chicken Chowder, W. E. Bryant & Co.	Brockton	18.91	17.00	3.99	3.00	7.43	9.00	Wheat bran and middlings, corn meal, alfalfa meal, linseed meal, granulated meal, not over 1% of salt.
Chicken Chowder, C. F. Pease	Chester	19.05	17.00	4.48	3.00	7.78	9.00	
Chicken Chowder, Record & Cote	New Bedford	19.18	17.00	4.56	3.00	7.65	9.00	
Ross Bros., Worcester, Mass.								
Wyandotte Mash Food, H. R. Lamb	Brookfield	17.48	16.00	3.50	3.50	10.27	10.50	Ground oats, wheat bran and middlings, corn meal, gluten feed, alfalfa meal, linseed meal, ground fish.
G. T. Savage Poultry Supply Co., Boston, Mass.								
Growing and Forcing Feed, Sumner Crosby & Sons	Boston	14.36	11.50	6.35	3.50	8.74	9.32	Corn meal, wheat bran, ground oats, bone meal, animal meal
Meat Cereal, Sumner Crosby & Sons	Boston	14.36	11.50	4.80	3.50	9.40	9.32	Corn meal, wheat bran, ground oats, meat scraps, charcoal
Meat Cereal, Sumner Crosby & Sons	Boston	12.65	11.50	4.22	3.50	9.36	9.32	
Shredded Wheat Co., Niagara Falls, N. Y.								
Shredded Wheat Waste, Boyes Bros.	Salem	11.08	10.00	1.95	1.50	2.12	2.00	Cooked wheat

DISCUSSION OF THE INSPECTION.

I. Protein Feeds.

Cottonseed Meal and Feed. Pages 6-8 The cottonseed meal situation during the past season has been most discouraging for the feeder. Never before has the general quality of the meal been as poor, nor the price as high.

The poor quality of the meal has been due in part to the fact that practically all of the lint has been removed from the seed and used for the manufacture of gun cotton. The removal of the lint prevents the hulls from matting together and allows them to slip through the sieves easily and mix with the meal.

While it is within the right of the crushers to so modify their process of manufacture as to meet existing commercial conditions, the fact that the resulting meal is often sold with a guarantee that cannot be maintained is inexcusable. Every up-to-date oil mill is under close chemical control and there is no reason why all of the products cannot be sold under a guarantee which more truthfully represents their chemical composition.

With few exceptions cottonseed meal is sold with the containing sack weighed as meal. In other words the purchaser gets about 1980 pounds of meal to the ton. With cottonseed meal retailing at about $40 a ton, this means a loss of some forty cents for every ton purchased. Consumers should insist on full weight and note the weight stated on the tag.

Average Analyses and Retail Prices.

	High Grades Choice	Medium Grades Prime and Good	High and Medium Grades
	1914	1914	1914
No. Samples	16	34	50
Protein (per cent)	42.23	39.26	40.21
Fat (per cent)	7.87	7.50	7.62
Fiber (per cent)	7.84	10.09	9.37
Price a ton	$36.25	$36.13	$36.17
	1915	1915	1915
No. Samples	35	35	70
Protein (per cent)	42.90	39.57	41.23
Fat (per cent)	7.96	7.40	7.68
Fiber (per cent)	8.48	10.02	9.56
Price a ton	$33.16	$33.81	$33.48
	1916	1916	1916
No. Samples	18	54	72
Protein (per cent)	42.61	38.78	39.74
Fat (per cent)	7.94	6.87	7.14
Fiber (per cent)	8.47	11.13	10.46
Price a ton	$39.50	$38.79	$38.96

Cottonseed Feed.
Pages 8

Under this heading are included 9 samples of cottonseed feed sold as cottonseed meal and one sample as represented. Wherever enough of the material was in stock, Federal samples were taken. The Canary brand meal taken from the stores of W. B. Herrick of Beverly and H. P. Ames of Peabody came from the same car. This car was consigned originally to a point in Maine where it was refused. It was then shipped to Beverly. As soon as the Massachusetts dealers were informed of its true quality they refused to handle it and it was sold to a fertilizer manufacturer for the probable purpose of being used in mixed fertilizer.

Linseed Meal.
Pages 8-9

The linseed meals examined practically maintained their guarantees. The product sold by Engle, Ryan & Co. and the Toledo Seed & Oil Co. ran noticeably lower in protein than did the other brands. A sample of the Engle, Ryan & Co. brand submitted to the Bureau of Chemistry at Washington was reported as being free from adulteration.

It is understood that linseed meal has been offered at wholesale during the past season at a price which compared favorably to that asked for cottonseed meal. This does not hold true for the price asked by the retailer. If the quality of cottonseed meal continues to depreciate, linseed meal should be more extensively used in its place providing it can be purchased at as satisfactory a figure.

Average Analyses and Retail Prices.

New Process.

	1913	1914	1915	1916
No. Samples	4	2	7	11
Protein (per cent)	37.21	36.47	37.05	38.20
Fat (per cent)	2.31	3.77	2.61	2.82
Fiber (per cent)	8.59	8.61	8.75	8.50
Price a ton	$39.00	$38.50	$39.00	$43.11

Old Process.

	1913	1914	1915	1916
No. Samples	31	25	22	27
Protein (per cent)	34.56	33.63	35.35	33.80
Fat (per cent)	6.74	6.98	6.48	6.04
Fiber (per cent)	7.76	8.93	7.86	8.08
Price a ton	$40.03	$38.02	$38.70	$43.45

Miscellaneous Oil Cakes
Page 9

Homcoline is the trade name for corn germ cake manufactured by the American Hominy Co. It consists of the corn germ separated from white corn in the manufacture of hominy and from which the oil has been extracted by means of pressure. *Argo Corn Oil Cake Meal* is a somewhat similar product manufactured by the Corn Products Refining Co. These materials were formerly sold abroad; they do not appear to have found a ready sale in our market.

So far as known cocoanut meal is sold only by one dealer in Massachusetts and at a price which renders it an economical concentrate. It contains slightly less protein and decidedly more fat than gluten feed and should equal it in feeding value.

The two brands of peanut cake meal reported are of exceptionally high quality and are without doubt obtained from the peanut kernel alone after the extraction of the oil. As agriculture becomes more diversified in the South, the peanut will become more of a staple crop and greater quantities of peanut cake will find their way into the market. The more common practice, however, will probably be to crush the shell together with the nut; the resulting mixture will contain more fiber and have less feeding value than the samples reported.

Gluten Meal.
Page 9

Only one brand of gluten meal, the Diamond, manufactured by the Corn Products Refining Co., was found. All of the samples collected exceeded their protein guarantee of 40 per cent. At the price asked and on account of its high protein and low fiber content, it can be considered a most excellent source of protein in the dairy ration.

Average Analyses and Retail Prices.

	1913	1914	1915	1916
No. Samples	9	11	10	11
Protein (per cent)	41.88	41.35	45.85	45.24
Fat (per cent)	2.18	1.40	1.34	1.15
Fiber (per cent)	2.31	2.28	1.10	1.30
Price a ton	$36.00	$37.00	$37.30	$37.80

Gluten Feed.
Page 10

All of the samples of gluten feed collected were of good quality and practically maintained their guarantees. Gluten feed as put out by most manufacturers at the present time differs materially from the product as originally sold in that the material dissolved out of the corn by soaking in the first step of preparing the grain for the separation of starch, is now recovered by evaporating the solution in vacuum evaporators and the resulting solid residue added to the feed. This condensed steep water increases the apparent acidity of the feed as well as its protein content. The increase in protein is believed to be due largely to soluble protein-like substances which have been dissolved out of the seed by the steep water and not to true protein.

Gluten feed usually sells at a price which makes it an economical protein concentrate for dairy purposes. It is best used as a component part of a ration containing other more palatable feeding stuffs.

Average Analyses and Retail Prices.

	1913	1914	1915	1916
No. Samples	41	36	22	27
Protein (per cent)	25.71	24.94	26.50	26.37
Fat (per cent)	3.24	2.86	2.73	2.94
Fiber (per cent)	6.67	6.68	6.25	6.68
Price a ton	$31.96	$33.11	$33.71	$32.87

Distillers' Dried Grains. Page 10

Owing to the increased demand and greater production of industrial alcohol, this resulting by-product has been more freely offered during the past season than for several years. *Ajax Flakes*, *Eagle 3D*, and the *Fourex* brands were of excellent quality. The other brands reported, while they did not contain as high a percentage of protein, could be considered very satisfactory feeding stuffs. *Continental Gluten Feed* (so-called) did not consistently maintain its protein guarantee and in every instance fell below its guarantee in fat. The manufacturers of this product insist on calling it gluten feed claiming that they have a prior right to the use of the term. Even though this contention be granted, the term gluten feed as used in this connection is confusing owing to the larger amount of corn gluten feed sold. The samples collected were evidently derived largely from corn which yields the best quality of distillers' grains. Rye grains were not collected.

Owing to the process of manufacture which exhausts the digestible starch of the seed, distillers' grains should be fed with corn meal, flour middlings, hominy feed or other starchy feeding stuffs. When fed in this manner they form an excellent addition to the ration and furnish not only a large amount of digestible protein but also bulk.

Average Analyses and Retail Prices.

	1913	1914	1915	1916
No. Samples	34	26	20	20
Protein (per cent)	31.04	31.28	30.86	30.58
Fat (per cent)	10.75	10.44	10.55	10.26
Fiber (per cent)	11.37	10.51	10.74	10.38
Price a ton	$34.53	$34.93	$35.39	$35.64

Brewers' By-Products. Page 11

Malt Sprouts. Only three samples of malt sprouts are reported and these were of good quality. Sprouts are practically out of the market owing to the large demand for them in manufacturing proprietary mixed feeds.

Brewers' Dried Grains. The use of Brewers' dried grains is evidently increasing. Twenty-one samples were collected. These vary somewhat in chemical composition due to the different grains used in the brewers' mash. At the present time (October, 1916) brewers' grains are being sold at about six dollars a ton less than the price asked for wheat bran. At this figure they form a satisfactory substitute for wheat bran in the dairy ration. They can also be used as a partial substitute for oats in feeding horses. One-fourth of the horse ration may consist of brewers' grains, one-fourth oats and one-half corn; or, one-half oats and one-fourth corn with one-fourth brewers' grains.

Average Analyses and Retail Prices.

Malt Sprouts.

	1913	1914	1915	1916
No. Samples	4	8	3	3
Protein (per cent)	27.55	26.62	24.14	26.77
Fat (per cent)	1.14	1.28	1.17	1.15
Fiber (per cent)	13.13	12.47	14.24	12.15
Price a ton	$28.20	$27.21	$30.00	$28.00

Brewers' Grains.

	1913	1914	1915	1916
No. Samples	9	10	17	21
Protein (per cent)	25.63	29.13	28.87	27.98
Fat (per cent)	5.93	6.12	6.48	6.88
Fiber (per cent)	13.96	12.35	13.28	13.43
Price a ton	$29.43	$29.43	30.50	$30.44

Yeast and Vinegar Grains. Page 11

According to the tentative definition adopted by the Association of Feed Control Officials, yeast or vinegar grains are "the properly dried residue from the mixture of cereals, malt and malt sprouts (sometimes cottonseed meal), obtained in the manufacture of yeast or malt vinegar and consists of corn or corn and rye from which most of the starch has been extracted, together with malt added during the manufacturing process to change the starch to sugars, and malt sprouts (sometimes cottonseed meal) added during the manufacturing process to aid in filtering the residue from the wort and serve as a source of food supply for the yeast."

Yeast and vinegar grains approximate rye distillers' grains in composition. They should not be confused with corn distillers' grains nor fed as a substitute for them if equally good results are expected. They have sold at a much lower price and can be considered an economical feeding stuff.

Average Analyses and Retail Prices.

	1916
No. Samples	4
Protein (per cent)	20.00
Fat (per cent)	7.18
Fiber (per cent)	17.69
Price a ton	$26.00

Wheat By-Products. Pages 12-20

Red dog flour, wheat middlings, wheat mixed feed, and wheat bran. No attempt has been made to group the wheat feeds according to whether they do or do not contain screenings. Wheat feeds free from screenings have a pleasant wheaty odor and are free from the black specks caused by the particles of ground weed seed. Where screenings are present in any considerable amount the feeds do not have as attractive an appearance and are usually distinguished by what may be described as a "bitter" odor due to the cruciferous weed seeds they contain. Many wheat products are branded as containing "mill run of screenings", "less than mill run of screenings", "trace of screenings", etc. In preparing wheat for milling, practically every seed is removed before the wheat goes to the rolls and any appreciable amount of screenings present is due to the deliberate addition of screenings after the wheat is milled. Where "mill run of screenings" is added, the condition of the resulting feed will depend upon the quality and purity of the wheat as purchased. Owing to climatic conditions, wheat products produced from the 1915 crop contained rather less protein than for former years.

Three samples of *Durum* or *Macaroni* wheat feeds were secured; one of the middlings and two of bran. These contained less protein and rather more fat and fiber than did the feeds produced from ordinary wheat.

Nothing need be said in regard to the feeding value of wheat products. They are staple articles of commerce and are sold more extensively than all other classes of feeding stuffs. Owing to a short wheat crop the price of flour as well as of all wheat products is advancing rapidly and it may be advisable to substitute dried brewers' grains or distillers' grains for wheat bran and middlings, particularly in the feeding of dairy stock; and to reduce the grain ration to a minimum.

Average Analyses and Retail Prices.
Red Dog Flour.

	1915	1916
No. Samples	5	10
Protein (per cent)	19.46	17.23
Fat (per cent)	5.21	4.55
Fiber (per cent)	2.79	2.57
Price a ton	$37.00	$37.30

Wheat Middlings.

	1913	1914	1915	1916
No. Samples	64	59	58	73
Protein (per cent)	17.88	17.84	17.70	16.36
Fat (per cent)	5.17	5.28	5.14	5.42
Fiber (per cent)	5.76	6.25	6.43	6.55
Price a ton	$32.20	$32.07	$33.31	$31.06

Wheat Mixed Feed.

	1913	1914	1915	1916
No. Samples	184	115	110	134
Protein (per cent)	16.91	17.21	17.29	16.10
Fat (per cent)	4.71	4.79	4.87	4.88
Fiber (per cent)	7.27	7.14	7.51	7.23
Price a ton	$30.73	$30.52	$32.38	$30.92

Wheat Bran.

	1913	1914	1915	1916
No. Samples	57	54	72	85
Protein (per cent)	15.86	16.47	16.33	15.43
Fat (per cent)	4.72	4.95	4.67	4.95
Fiber (per cent)	9.48	9.48	9.64	9.62
Price a ton	$28.18	$28.23	$30.33	$28.26

Rye Feeds Page 20 Eight samples of rye feed and rye middlings were collected. All were of satisfactory quality.

Wheat Feeds with Admixtures Page 21 But one brand of feed, *Buckeye*, manufactured by the Quaker Oats Company appears under this heading. It is a mixture of wheat and rye products and is said to give fully as satisfactory results as wheat mixed feed.

Dairy and Horse Feeds (More than 15% Protein) Pages 21-23 *Bibby's Horse Feed*, *Bibby's Dairy Feed*. These are English products no longer found on the market.

Creamery Feed manufactured by the Buffalo Cereal Company is certified to contain: corn meal, wheat bran and middlings, hominy feed, gluten feed, cottonseed meal, and oat meal mill by-products. The oat hulls that it contains lessen to an extent its feeding value. The same remark applies to *Dewey Bros. Stock Feed* which is certified to contain: hominy feed, cottonseed meal, linseed oil meal, wheat and rye middlings and oat meal mill by-products.

Ropes Bros'. Horse Feed contains a small amount of sphagnum moss which was present in the molasses feed that was added.

All of the other proprietary grain mixtures collected contained no low grade products, and it simply remains for the feeder to determine under his own conditions whether it is more economical to mix his rations from the standard by-products found on the market or to purchase these ready mixtures. It is believed that any of them will prove satisfactory. As a rule it is believed the feeder can purchase staple feedstuffs and compound his own feed mixtures for less money than by purchasing the ready rations.

Molasses Feeds (More than 15% Protein) Pages 34-35-36

Feeds of this character appear to increase from year to year. Most of them make use of products that, while they are excellent absorbents for molasses, have a low feeding value. Some of the more common low-grade products used in molasses feeds are as follows

Grain screenings contain the smaller imperfect grains, weed seeds, chaff and other foreign material separated in cleaning grain. Screenings naturally partake, to a certain extent, of the characteristics of the seeds from which they are derived. It is frequently noted that molasses feeds are certified to contain "ground and bolted grain screenings". This is an indication of better mechanical condition and practically no screenings are used at the present time in molasses feeds that have not undergone this process. Certain weed seeds such as the wild mustard are sometimes separated from the screenings as having greater commercial value by themselves than as a component of a molasses feed. The statement that a molasses feed contains the mixed broken grains of cereals does not necessarily indicate any real addition to the mixture as all screenings contain these seeds.

Clipped oat by-product results in the preparation of clipped oats and contains the light chaffy material broken from the ends of the oat hulls, empty hulls, light immature oats and dust. It is an excellent absorbent for molasses.

Oat meal mill by-product is simply the by-product obtained in the manufacture of rolled oats and consists largely of oat hulls together with some light oats and oat middlings.

Cocoa shells are the waste hulls from the cocoa bean in the manufacture of chocolate. Their real feeding value is problematical.

Ivory nut meal is made from the waste vegetable ivory obtained from button factories. In spite of its hard bony appearance it appears to have considerable feeding value when finely ground.

Molasses feeds contain so much material of inferior quality that it has been found necessary to expend considerable ingenuity in compounding them in a manner to warrant their ready sale. The manufacturers have succeeded in a measure. The screenings or oat hulls are well ground, their mechanical condition improved and their identity to an extent concealed. The characteristic odor of the weed seeds of the screenings is usually present, however.

Purina Cow Chow feed contains no low-grade by-products although the ground alfalfa hay present does not add to its value as a grain ration.

Calf Meals.
Page 26

The calf meals collected represent the attempt of several manufacturers to formulate satisfactory partial milk substitutes for young calves. The chemical composition of the meals indicates that this attempt has succeeded in a measure, although it is the opinion of the writer that many of them contain substances that, while they do not add materially to the value of the mixtures, do increase the cost. Calf meals can only partially take the place of milk for young calves. In order to serve as partial substitutes they should be composed of easily digested grains or by-products, be reasonably rich in protein and fat, and substantially free from fiber.

II. Starchy (Carbohydrate) Feeds.

Corn Meal and
Similar Products.
Page 27

While corn meal is found in practically every feed store, very few samples are collected as this product is practically free from adulteration and unless mixed with other material is exempt from the requirements of the feeding stuffs law. Much of the meal offered does not contain the entire kernel but is rather a by-product from the manufacture of cracked corn and table meal. So far as can be ascertained it is fully equal to meal made from the entire seed.

The two samples of so-called corn middlings contained rather more of the germ than did the samples of meal collected and more nearly approached hominy feed in chemical composition.

Corn feed meal of which several samples are reported is the siftings obtained in the manufacture of cracked corn and table meal from the whole grain. It is sometimes erroneously called yellow hominy feed and is similar to hominy feed in feeding value.

The sample of damaged corn meal collected shows the chemical composition of average corn meal. It cannot, however, be considered its equal in feeding value because of its possible detrimental effect upon the animals and its lack of palatability. It should be cooked and fed to hogs.

The corn bran reported was of good quality. On account of its higher fiber content it cannot be considered equal to more than three-fourths the value of corn meal.

Average Analyses and Retail Prices.

Corn Meal.

	1913	1914	1915	1916
No. Samples	20	47	31	15
Protein (per cent)	9.05	9.47	9.28	9.00
Fat (per cent)	3.78	3.58	3.47	3.52
Fiber (per cent)	2.04	2.22	2.06	1.90
Price a ton	$25.92	$33.58	34.81	$34.60

Hominy Meal.
Pages 27-29

Yellow hominy feed. It is understood that very little or no yellow corn is used for the preparation of hominy and the material known as yellow hominy should be more properly sold as corn feed meal. While its composition indicates that it is practically equal to white hominy in feeding value, it is manifestly unfair to the white corn millers to imply that it is the product of the hominy mills.

White hominy feed. The samples collected were of good quality. Hominy frequently carries a lower percentage of fat than formerly due to the fact that the germ is removed and the corn oil extracted from it. After the extraction of the oil the residue is either sold as corn germ cake or is remixed with the hominy feed. Feeders should bear in mind that hominy feed is uniformly of lower moisture content than corn meal and hence is slightly superior in feeding value. It can often be purchased at a lower price than corn meal and can replace the latter in any grain mixture with satisfactory results.

Average Analyses and Retail Prices.

	1913	1914	1915	1916
No. Samples	67	62	67	73
Protein (per cent)	10.78	11.27	11.16	11.14
Fat (per cent)	7.29	6.96	7.55	7.20
Fiber (per cent)	3.85	4.23	4.39	4.33
Price a ton	$30.85	$32.91	$33.19	$34.16

Provender
Page 29

The term provender as understood locally refers to a mixture of whole corn and whole oats ground together. The samples examined were free from adulteration. *The Imperial Steam Cooked Feed* is a special brand composed of corn and oats coarsely crushed or rolled. While it has not been cooked sufficiently to rupture the starch grains, it has probably been heated enough to dry it out and to prevent the development of mould spores.

Dried Beet Pulp. Page 29

Judging from the excellent results obtained in the feeding of dried beet pulp, the chemical composition of this material cannot be considered an accurate measure of its true feeding value. Experiments at this station have shown it to be a satisfactory carbohydrate feed. A special circular will be furnished on request. The samples collected were of good quality.

Oat Feed Page 29

Oat feed or oat hulls cannot be considered an economical feeding stuff. The Association of Feed Control Officials has refused to recognize the term oat feed as it is considered misleading and is often confused with ground oats. A number of states also refuse to register feeding stuffs as containing oat feed but require the statement "oat middlings, oat shorts and oat hulls" all of which oat feed contains in varying amounts. It is more extensively sold as a component of stock feeds than as a product by itself.

Stock and Horse Feeds. Pages 30-33

The sale of these feeds forms an outlet for an enormous amount of oat meal mill by-products from the manufacture of cereal breakfast foods. Practically all of them contain oat hulls in varying amounts. They are, with few exceptions, as guaranteed and sold for what they really are. The feeder should judge for himself, particularly at the prevailing high prices for all concentrates, whether it is more economical to use these mixtures or the straight by-products. It is not possible to give specific advice in this bulletin as prices vary so rapidly. The station is ever ready to furnish information to suit individual cases.

Molasses Feeds. (Less than 15% Protein). Pages 34-36

Many of the feeds found under this heading contain alfalfa as a base mixed with oats, corn or cereal by-products. If alfalfa in such mixtures is sold at the same price asked for grains and cereal products, its use is of doubtful economy. The agitation in favor of the alfalfa crop in Massachusetts has evidently confused certain feeders and given them an erroneous idea of its true feeding value. It is a valuable product whether home grown or purchased but not worth grain prices.

Xtravim Feed is a mixture of cane molasses and sphagnum moss. The moss serves as an excellent carrier and absorbent for the molasses. Otherwise it does not materially add to the value of the feed.

Miscellaneous Feeds. Page 36

Bibby's Pig Meal is an English product no longer found on the local markets.

The *Dried Grains* sold by A. H. Brown & Bros. is a residue from the manufacture of a popular brand of infant food. It has the appearance of brewers' dried grains but contains only about half as much protein.

Sterling Feed and *Blue Grass Valley Feed* are mixtures of wheat by-products and corn and cob meal.

Ri-Co Feed is a by-product from the preparation of rice for the market. It approximates corn meal in feeding value.

III. Poultry Feeds.

Animal Products.
Pages 37-38

Meat Scraps, Meat and Bone Meal. These products are listed as named by the manufacturers. There is no doubt that some of the so-called meat scraps could be more properly called meat and bone meals on account of the large amount of bone which they contain. In the purchase of meat scraps preference should be given to those free from an excessive amount of bone, of good mechanical condition, and free from disagreeable taint or odor. The percentage of bone phosphate present in the different products collected is given and also the approximate percentage of *bone* as determined by formula, (based upon the amount of bone phosphate present.)

Milk By-Products.
Page 38

Uncle Sam Granulated Milk and *Eg-O Milk Albumen* while evidently milk by-products, are in no sense what their names imply. The Eg-O Milk Albumen contained 28.93 per cent of ash, 9.49 per cent of phosphoric acid and 14.24 per cent of calcium oxide.

Alfalfa Meals.
Page 39

The alfalfa meals reported varied to a considerable extent in chemical composition, depending upon the quality of the alfalfa hay from which they are derived. While it is difficult to judge as to the quality of alfalfa meal by appearance alone, that of a bright color, of good clean odor and with a liberal proportion of pulverized leaves will be found most satisfactory. The first cutting of alfalfa, especially if harvested in late bloom, is bound to make an inferior alfalfa meal.

Poultry Mashes and Meals.
Pages 40-44

The poultryman who prefers to purchase his feeds ready mixed will have no trouble in making a selection from the large number of brands offered. Preference should be given to those brands that do not contain grits, lime or other inorganic material, which can be purchased much cheaper than at grain prices. The large poultryman can usually prepare his own mash cheaper than he can purchase many of the proprietary articles. The samples collected showed a wide range in chemical composition. Our knowledge of poultry nutrients is not sufficient to justify one in making any particularly critical remarks. It may be said in a general way that mixtures containing about 12 to 15 per cent of protein, some 5 per cent of fat and ash, and not over 5 per cent of fiber together with the desired palatability should prove satisfactory. When growth and egg production are desired, extra protein and mineral matter must be supplied in the form of animal matter, green material, bone and shells. Special skill in handling the flock is fully as important as the character of the feeds supplied.

COMPLETE FODDER ANALYSES.—Average

No. Samples	Feedstuffs	Name of Manufacturer.	Water	Protein.		Fat		Nitrogen free extract.	Fiber.		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Cottonseed Meal										
1	M. F. B.	M. F. Baringer	7.47	38.00	38.62	8.29	6.00	32.29	7.72	12.00	6.23
1		Bowen & Murphy	7.34	42.38	41.00	7 59	6.50	27.90	8.53	10.00	6.26
1	Dove	F. W. Brode & Co.	7.57	38.44	38 63	8.55	6.00	27.78	10.75	10.00	6.91
5	Owl	F. W. Brode & Co.	8.01	43.66	41.00	7.96	6 00	26.04	7.94	10.00	6.39
12	Buckeye	Buckeye Cotton Oil Co.	7.36	38 78	38.62	6.62	6.00	29.63	11.36	12.00	6.25
1	Camel	C. L. Campbell & Co.	7.98	37.74	38 50	7.02	6.00	29.82	11.14	12.00	6 30
4	Gilt Edge	Empire Cotton Oil Co.	7.16	39.49	38.00	6 98	6.00	29.35	10.78	12 00	6.24
1	Bull	Humphreys-Godwin & Co.	8.35	40.37	41.00	6 63	6 00	29 07	8.21	10.00	7.37
8	Dixie	Humphreys-Godwin & Co.	7.58	38 23	38.62	7.30	6.00	29 28	11.48	12.00	6.13
7	Forfat	Humphreys-Godwin & Co.	7.99	37.57	38.62	7.23	6.00	29 48	11.65	12.00	6.08
3	Jersey	Lanier Bros.	9.73	39.50	38 62	7.09	6 00	27.79	10.41	10.00	5.48
3	Kineda	J. M. MacDonald	7.55	40.02	38.60	7.46	6.00	28.67	10.19	12.00	6.11
2	Macado	J. M. MacDonald	7.08	41.64	41.00	6.17	6.00	28.90	9.82	12.00	6.39
2	Selden	Memphis Cottonseed Products Co	8.03	41.12	41.00	7.99	6 00	25.88	10.21	10.00	6.77
2	Tip Top	Meridian Grain & Elevator Co.	6.76	42.73	38.62	8.00	6 50	27.51	7.86	10.00	7.14
7	Canary	C. L. Montgomery & Co.	7.26	37.25	38.63	7.10	6 00	30.40	11.68	12.00	6.31
1	Bee	W. C. Northern	8.28	40.89	41.00	6.41	6 00	27.02	11.33	10.00	6.07
1	Baltimore	W. Newton Smith	8.08	37.04	38.62	6.36	7.00	30.17	12.93	10.00	5.42
2	Dirigo	W. Newton Smith	8.11	40.57	41.00	7.56	7.00	27 63	9.85	10.50	6.28
6	Pilgrim	J. E. Soper Co.	7.88	38.37	38.50	6.65	5 00	29.77	11.65	10.00	5.68
4	Pioneer	J. E. Soper Co.	6.74	40.63	41.00	6.79	7 00	28.71	10.55	10.00	6.58
1	Magnolia	Union Brokerage & Commission Co.	8.78	38.09	38.62	6.83	7.50	28.16	11.68	10.00	6.46
6	Red Tag	Union Seed & Fertilizer Co.	7.00	37.62	38.55	7.06	7.00	31 33	10.93	11.50	6.06
81	All Samples		7.61	39.18	—	7.11	—	29.01	10.76	—	6.33
	Cottonseed Feed Meal										
1	"77"	Humphreys-Godwin Co.	9.47	20.49	20.00	6.95	4.00	36.10	22.92	28.00	4.07
	Linseed Meal										
3	Linseed Oil Meal	American Linseed Co	8 57	38.47	36 00	2.86	2.00	35.74	8.39	9.00	5.97
2	Cleveland Flax Meal	American Linseed Co	8.64	38 20	36.00	3.45	2.00	35.11	8.16	9.00	6.44
6	Hypro Linseed Meal	American Linseed Co	8.57	38 07	36.00	2.59	2.00	35.88	8.67	9.00	6.22

COMPLETE FODDER ANALYSES. Average.—(*Continued.*)

No. Samples	Feedstuffs	Name of Manufacturer.	Water	Protein.		Fat.		Nitrogen free extract.	Fiber.		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Linseed Meal.—(*Continued*)										
4	Old Process Oil Meal	American Linseed Co.	8.48	35.52	34.00	6.91	5.00	36.52	7.18	8.00	5.39
2	Ameco old process linseed meal	American Milling Co.	8.80	30.39	30.00	6.58	5.00	37.99	9.54	10.00	6.70
6	Old process linseed oil meal	Engle Ryan & Co.	10.79	30.31	30.00	5.65	7.00	38.28	8.68	10.00	6.29
4	Old process linseed oil meal	Kelloggs & Miller	8.92	37.42	31.00	5.78	4.00	35.15	7.60	9.00	5.13
1	Old process linseed oil meal	W. N. Potter & Sons	9.05	37.39	32.00	5.82	4.00	35.35	7.50	9.00	4.89
6	Old process linseed oil meal	Spencer Kellogg & Sons	9.04	35.43	33.00	5.77	5.00	36.60	7.87	10.00	5.29
4	Old process linseed oil meal	Toledo Seed & Oil Co.	9.34	32.06	30.00	6.22	5.00	38.22	8.32	10.00	5.84
	Miscellaneous Oil Cakes										
4	Homcoline, corn germ meal	American Hominy Co.	5.16	19.96	17.00	6.97	5.00	55.18	5.66	7.00	7.07
3	Argo, corn oil cake meal	Corn Products Refining Co.	9.00	24.69	20.00	8.36	9.00	47.01	8.91	10.00	2.03
2	Coco, cocoanut oil meal	Oil Seeds Co.	6.98	22.99	20.00	12.05	7.00	42.98	9.61	10.00	5.39
1	Alpha, peanut oil meal	Oil Seeds Co.	8.20	48.74	40.00	7.41	7.00	26.22	4.20	5.00	5.23
1	Beta, peanut oil meal	Oil Seeds Co.	7.08	35.03	30.00	10.03	7.00	35.74	8.01	8.00	4.11
	Gluten Meal										
11	Diamond	Corn Products Refining Co.	9.60	45.24	40.00	1.15	1.50	41.38	1.30	4.00	1.33
	Gluten Feed										
2	Cream of Corn	American Maize Products Co.	9.29	25.81	24.00	1.82	2.00	53.48	6.83	8.50	2.77
5	Clinton	Clinton Sugar Refining Co.	8.51	26.97	23.00	3.63	3.00	51.18	6.94	8.00	2.77
7	Buffalo	Corn Products Refining Co.	9.60	27.85	23.00	2.34	1.00	49.71	6.21	8.50	4.29
3	Crescent	Corn Products Refining Co.	9.01	26.19	23.00	3.59	1.00	51.14	6.69	8.50	3.38
3	Globe	Corn Products Refining Co.	7.44	27.85	23.00	2.38	1.00	51.02	6.62	8.50	4.61
3	Douglas	Douglas Co.	8.93	23.79	23.00	2.81	1.00	53.82	7.04	8.00	3.69
2	K. K. K.	J. C. Hubinger Bros Co.	8.24	24.02	23.00	4.45	2.40	54.80	6.61	7.50	1.88
2	Staley's	A. E. Staley Mfg. Co.	9.02	24.56	23.00	3.06	2.50	51.74	7.10	12.00	4.52
	Distiller's Grains										
5	Ajax Flakes	Ajax Milling & Feed Co.	5.68	32.52	30.00	10.65	11.00	37.29	11.20	14.00	2.66
4	Continental	Continental Cereal Co.	6.63	28.12	29.00	8.18	10.00	46.09	7.08	10.00	3.90
5	Corn 3D	Dewey Bros Co.	4.96	28.54	26.00	10.43	9.00	42.59	11.54	13.00	1.94
3	Eagle 3D	Dewey Bros Co.	5.70	32.22	30.00	11.38	10.00	37.38	11.49	13.00	1.83

COMPLETE FODDER ANALYSES. Average.—(*Continued.*)

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein.		Fat.		Nitrogen free extract.	Fiber.		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Distillers' Grains.—(*Continued.*)										
1	Columbia	Grain Products Sales Co.	4.79	29.07	30.00	9.28	10.00	44.86	7.80	14 00	4.20
2	Eurex.	Ubiko Milling Co.	5.54	34.11	31.00	11.87	12.00	34.94	11.68	13.00	1.86
3	Malt Sprouts.	All Samples.	7.38	26.77	—	1.15	—	46.92	12.15	—	5.63
	Brewers' Grains										
11	Bull	Farmers Feed Co.	6.13	29.27	27.20	6.84	6.30	41.17	13 11	15.20	3.48
2		Haffenreffer & Co.	6.15	26.15	25 00	5.73	6 00	46 76	12 38	18.00	2 83
3		James Hanley Brewing Co.	6.05	25.02	20.00	6.93	6.00	43.21	15.23	18.00	3.56
1		Narragansett Brewing Co.	9 89	23.60	22.00	6.55	5.00	44.17	12 47	—	3.35
3		Providence Brewing Co.	5.12	30 43	22.00	6.87	5.00	41.33	13 23	15 00	3.02
1		Western Grain & Feed Co.	6.14	23.29	20.00	9.86	5.00	42.29	15.10	16.00	3.32
	Yeast and Vinegar Grains										
2	Fleischman's.	Fleischman Co.	4.84	19.92	19 00	7 00	7.00	52.96	13.06	19.00	2.22
1	Onyx	Hottelet & Co.	5.97	19 88	19 00	5 90	7 00	47 85	17 61	19.00	2.81
1	M V C. O.	Milwaukee Vinegar Co.	6.40	20 28	21.00	8.83	5 00	45.49	17.02	12.90	1.92
	Wheat Middlings										
9	Red Dog Flour	All Samples.	9.89	17.25	—	4.57	—	62.36	2 61	—	3.32
73	Flour and Standard.	All Samples.	9.27	16.42	—	5.39	—	58.62	6.41	—	3.89
	Wheat Mixed Feed										
2	Acme.	Acme-Evans Co.	9 57	17.16	16 00	4.26	4 00	55 41	7.91	9.00	5.69
5	A M C. O	Amendt Milling Co	8 32	15 73	15 00	4.97	4 00	53 00	7 25	8 00	4.68
2	Bailey's.	E. W Bailey & Co.	7 90	15 70	16 00	4 45	3 75	53 12	7.60	8.50	5.23
2	Banner.	Banner Milling Co.	8 75	15.24	15 00	5 61	4.25	57.31	8.29	11.75	4 80
1	Bull's Eye.	Blish Milling Co.	11 62	15 85	16 00	4.33	4.40	54 78	7.70	9 10	5.72
1	All Right.	Wm C Brett.	8 94	14 63	16 00	5.28	4 00	58 68	7 89	7 00	4 58
9	Wirthmore.	Chas M Cox Co.	9 40	15 35	16 00	4.63	4 00	53 48	7.32	7 00	4.76
11	Boston	Duluth Superior Milling Co.	8.72	15 53	15 00	5 23	4 25	57 54	8.01	9 75	4 91
2	E. A. C. O.	Everett, Aughenbaugh & Co.	9 74	17 12	15 00	5.76	3 00	54.66	7.62	12 00	5 10

COMPLETE FODDER ANALYSES. Average.—(*Continued.*)

No. Samples	Feedstuffs	Name of Manufacturer.	Water	Protein.		Fat.		Nitrogen free extract.	Fiber.		Ash
				Found	Guar.	Found	Guar.		Found	Guar	
	Wheat Mixed Feed.—(*Continued.*)		%	%	%	%	%	%	%	%	%
3	Royal Worcester	J. B. Garland & Son	8.44	15.65	16.00	4.98	4.50	58.76	7.10	7.00	5.07
1	Garland	Garland Milling Co.	9.14	16.86	15.25	4.52	3.75	56.89	7.35	9.00	5.24
2		Glen Mill Cereal Co.	8.19	14.19	16.00	4.11	4.00	60.94	7.71	—	4.86
1	Bran and Shorts	Glen Ullin Roller Mills	7.94	13.84	16.00	5.22	4.50	60.18	8.05	8.00	4.77
5	Improved Grafton	Grafton Roller Mills Co.	8.47	15.52	15.40	5.56	4.50	59.11	6.98	9.30	4.36
4	Certified	Hunter Robinson Wenz Milling Co.	9.24	17.33	15.50	5.21	4.00	56.17	7.05	10.00	5.00
2	Sunshine	Hunter Robinson Wenz Milling Co.	7.71	16.71	15.50	4.94	4.00	57.94	7.50	10.00	5.20
1	Matchless	Hunter Robinson Wenz Milling Co.	8.31	17.43	15.50	4.62	4.00	56.39	7.55	10.00	5.70
3	Crescent	Kemper Mill & Elevator Co.	8.60	17.12	16.00	4.38	4.00	56.48	7.63	10.00	5.59
4	Snowflake	Lawrenceburg Roller Mills	9.80	17.03	15.20	4.53	4.30	55.78	7.32	8.00	5.54
1	XXXX Special Hiawatha	New Enlgand Flour Co.	8.33	14.98	15.00	5.44	3.00	59.86	7.01	10.00	4.38
1	N. M. Co's	Noblesville Milling Co.	8.43	17.21	16.00	4.36	4.00	57.39	7.18	8.00	5.43
10	Planet	Northwestern Consolidated Milling Co.	8.82	16.68	15.00	5.28	4.00	58.88	5.78	8.00	4.56
11	Pillsbury's	Pillsbury Flour Mills Co.	9.41	15.94	16.00	4.66	4.50	59.02	6.26	9.00	4.71
2	Royal	Royal Milling Co.	9.26	15.55	16.00	4.63	3.50	58.57	7.55	8.00	4.44
2	Maxim	Rush City Milling Co.	8.68	14.98	16.60	5.42	4.00	58.16	7.87	8.00	4.89
8	Occident	Russell Miller Milling Co.	9.01	16.13	15.00	5.61	4.50	56.67	7.66	10.00	4.92
10	Gold Mine	Sheffield-King Milling Co.	9.41	16.42	15.90	5.00	4.90	56.02	8.02	8.90	5.13
7	Try Me	Sparks Milling Co.	9.47	17.63	16.00	4.44	3.50	55.62	7.43	8.00	5.41
3	Wabash	Sparks Milling Co.	10.30	16.42	14.00	4.31	3.50	57.01	6.83	11.00	5.13
2	Honest	David Stott Flour Mills, Inc.	8.76	15.28	15.50	4.52	5.00	59.30	7.41	8.00	4.73
2	Stratton's	Stratton & Co.	9.33	14.72	14.00	4.26	4.00	60.55	6.53	9.00	4.56
1	Angelus	Thompson Milling Co.	10.13	14.28	13.00	4.71	4.00	61.32	5.89	14.00	3.67
3	T. & C.	Thornton & Chester Milling Co.	9.01	16.19	15.00	5.34	4.50	55.83	8.42	9.00	5.21
3		Waggoner Gates Milling Co.	8.67	14.82	15.00	4.60	3.00	59.50	6.79	9.00	5.62
2		Washburn Crosby Co.	8.35	14.96	16.00	5.08	4.50	58.73	8.05	9.00	4.83
1	Blue Seal	H. K. Webster Co.	8.13	16.55	16.00	4.13	4.00	60.89	5.93	7.00	4.37
4	Kent	Williams Bros Co.	9.55	15.24	12.00	4.18	2.00	60.53	5.87	15.00	4.63
83	Wheat Bran	All Samples	8.77	15.51	—	4.92	—	55.14	9.52	—	6.14

COMPLETE FODDER ANALYSES. Average.—(*Continued.*)

No. Samples	Feedstuffs	Name of Manufacturer.	Water	Protein.		Fat.		Nitrogen free extract.	Fiber.		Ash
				Found	Guar	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Durum Wheat Products										
1	Middlings	Pillsbury Flour Mills Co	10.29	12.87	12.50	6.20	4.00	53.97	11.75	11.00	4.92
1	Bran	Pillsbury Flour Mills Co	7.31	12.17	11.00	6.25	4.00	54.98	13.81	14.00	5.48
1	Bran, Nokomos	Yerxa, Andrews & Thurston	8.91	12.30	12.00	5.76	5.50	54.63	13.44	13.00	4.91
	Wheat Feeds with Admixtures										
5	Buckeye (wheat & rye feeds)	Quaker Oats Co.	8.62	15.88	15.50	5.37	4.50	57.49	7.67	8.50	4.97
3	Sterling, (wheat with corn & cob ml)	Indiana Milling Co	8.91	10.00	10.00	3.32	3.00	58.20	15.63	16.00	3.94
3	Blue Grass Valley, (wheat " " ")	A. Waller & Co	9.29	10.33	9.00	3.14	2.00	57.62	15.47	17.00	3.65
	Dairy Feeds **(More than 15% Protein)**										
1	Bibby's Dairy Feed	J. Bibby & Sons	8.22	20.40	18.00	6.32	6.00	44.92	12.27	11.00	7.87
2	Bibby's Horse Feed	J. Bibby & Sons	9.12	20.78	18.00	7.05	6.00	43.38	12.01	11.00	7.66
4	Creamery Feed	Buffalo Cereal Co.	8.36	19.34	18.00	5.52	4.00	51.80	10.41	9.00	4.57
7	Unicorn Dairy Ration	Chapin & Co	7.77	26.24	26.00	6.79	5.50	43.86	10.31	10.00	5.03
8	Wirthmore Balanced Ration	Chas. M. Cox Co.	8.09	26.02	25.00	5.02	5.00	47.53	8.90	9.50	4.44
2	Crosby's Ready Ration	E. Crosby & Co	6.22	25.77	25.00	6.87	7.00	48.37	8.04	9.00	4.73
4	Dewey's Stock Feed	Dewey Bros Co.	8.38	16.05	11.00	4.61	3.50	54.57	11.88	12.00	4.51
8	Elmore Milk Grains	Elmore Milling Co.	6.71	26.11	25.00	5.57	6.00	47.25	9.75	10.00	4.61
13	Larro Feed	Larrowe Milling Co.	8.09	20.52	19.00	3.68	3.00	51.13	12.14	14.00	4.44
3	Ropes' Horse Feed	Ropes Bros	7.44	17.01	16.00	4.98	5.00	54.57	10.98	9.50	5.02
10	Union Grains	Ubiko Milling Co.	7.05	25.45	24.00	6.83	7.00	45.79	9.70	9.00	5.18
2	Wood's Dairy Blend	A. H. Wood & Co.	7.69	23.35	22.00	6.98	6.00	46.79	9.39	10.00	5.80
	Molasses Feeds **(Containing over 15% Protein)**										
4	Sucrene Dairy Feed	American Milling Co.	13.52	18.10	16.50	4.96	3.50	41.74	11.87	12.00	9.81
1	Butterfat Dairy Feed	Allneeda Mills	12.99	18.46	15.00	3.34	3.00	42.39	12.12	15.00	10.70
2	Iroquois Dairy Feed	Buffalo Cereal Co.	14.33	15.89	15.00	3.02	4.00	47.68	9.83	9.00	9.25
8	Cloverleaf Dairy Feed	Cloverleaf Milling Co.	12.71	17.66	16.50	3.90	3.50	45.74	11.35	12.00	8.64
1	Lactola Dairy Feed	Chapin & Co.	10.70	17.66	16.50	3.22	3.00	48.41	10.40	12.00	9.61
3	Algrane Milk Feed	H-O Company	11.70	16.12	14.00	4.37	4.00	50.90	10.74	10.00	6.17

COMPLETE FODDER ANALYSES. Average.—(*Continued.*)

No Samples	Feedstuffs	Name of Manufacturer.	Water	Protein.		Fat.		Nitrogen free extract.	Fiber.		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Molasses Feeds (Containing over 15% Protein) (*Continued*)										
3	Special Dairy Feed	International Sugar Feed Co.	13 03	15.21	15 00	4 69	4 50	45 18	12 15	12 00	9 74
1	Butterene Dairy Feed	Nowak Milling Corp.	11.49	18 42	17 50	4 61	4 00	44 94	11 68	12 00	8 86
1	Cream-O-Lene	Nowak Milling Corp.	9 35	19 92	20 00	5 45	4 00	48 76	9 97	9 00	6 57
1	Blue Ribbon Dairy Feed	Quaker Oats Co.	11.20	25 21	25 00	3 63	3 50	43 13	9 99	12 00	6 84
7	Purina Cow Chow Feed	Ralston Purina Co.	11.98	24 71	24 00	4 08	5 00	39 66	12 07	12 00	7 50
8	Protena Dairy Feed	Ralston Purina Co.	12.49	16 06	16 50	4 01	3 50	43 74	13 79	12 00	9 91
1	Republic Dairy Feed	Republic Milling Co.	9.01	16.94	16.50	3.13	3.00	46 66	11 05	12.00	13.21
9	Hammond Dairy Feed	Western Grain Products Co.	13.08	16.49	16.50	3.82	3.50	43 81	11.49	11 00	11 31
8	Rye Feed	All Samples	9.67	15.13	—	3.29	—	63.52	4.52		3.87
	Calf Meals										
3	Blatchford's	Blatchford's Calf Meal Factory	9.92	24.59	24.00	5.76	5.00	48 09	5 96	6 75	5.68
1	Cloverleaf	Cloverleaf Milling Co.	9.29	24.38	25.00	5 92	6 00	46 83	7 04	7.00	6.54
1	Calf Meal	Park & Pollard Co.	11.87	24 65	25.00	5.65	5 00	46 33	5 60	6 00	5.85
2	Ryde's Cream Calf Meal	Ryde & Co	9.32	23 70	25 00	4 91	5 00	50 77	5 79	6 00	5.51
2	Sugarota	Sugarota Calf Meal Co.	9 09	23.91	25 00	5.08	6.00	54.34	4 03	6.00	3 55
	Miscellaneous Protein Feeds										
1	Dog Food	John C. Dow Co.	11.12	20 49	20 00	9.67	5 00	53 99	—	1.00	4.73
1	Lexington Star Hog Feed	Lexington Grain Co	8.00	15 76	10 00	4.95	3 00	58 74	6 19	11 00	6.36
1	Palmo Middlings	Newsome Feed & Grain Co.	4 57	17 34	16 00	8 09	6 00	58 60	6 47	7 00	4 93
1	Oat Middlings	Manufacturer unknown	7.14	15.94	—	6 44	—	64 32	3 50	—	2.66
	Corn										
13	Corn Meal	All Samples	13 02	8 93	—	3 11	—	72 14	1 60	—	1 20
3	Corn Bran	All Samples	10 06	10 03	—	6 19	—	62 51	8 70	—	2 51
2	Corn Middlings	Glen Mills Cereal Co.	9 32	13 49	10 00	7 70	10 00	62 25	4 82	7 00	2 42
4	Corn Feed Meal	All Samples	10 71	8 99	—	3 94	—	72 46	2 34	—	1 56

COMPLETE FODDER ANALYSES. Average.—(*Continued.*)

No. Samples	Feedstuffs.	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Hominy Feed										
13	Yellow Hominy Feed	All Samples	9.82	10.89	—	7.64	—	65.01	4.15	—	2.49
61	White Hominy Feed	All Samples	8.77	11.19	—	7.17	—	65.76	4.36	—	2.75
7	Provender (corn and oats)	All Samples	10.14	10.26	—	4.34	—	68.28	4.76	—	2.22
	Stock and Horse Feeds										
1	Amco Chop Feed	Amendt Milling Co.	8.93	10.42	7.87	3.40	3.92	66.13	6.81	10.95	4.31
1	All Right Stock Feed	Wm. C. Brett	8.34	9.81	9.00	6.31	4.00	64.15	8.06	9.50	3.33
1	Chop Feed	Buffalo Cereal Co.	8.37	9.46	7.00	4.82	3.00	61.63	11.55	9.00	4.17
4	Horse Feed	Buffalo Cereal Co.	8.83	12.15	10.00	4.84	4.00	60.86	9.68	9.00	3.64
1	Steam Cooked Feed	Buffalo Cereal Co.	8.34	11.12	8.00	5.85	4.00	65.72	5.98	9.00	2.99
3	Stock Feed	Buffalo Cereal Co.	9.08	10.65	8.00	5.66	4.00	64.35	7.08	9.00	3.18
1	Chesbro's Stock Feed	Buffalo Cereal Co.	8.36	10.77	8.00	6.70	3.25	60.37	9.42	10.00	4.38
1	Wheelock's Horse Feed	Buffalo Cereal Co.	9.10	10.51	10.00	7.21	3.00	65.79	4.36	10.00	3.03
1	Charlestock Feed	Chas M. Cox Co.	5.66	7.71	6.00	4.55	3.00	59.48	17.15	16.09	5.45
11	Wirthmore Stock Feed	Chas,. M. Cox Co.	8.44	10.18	9.00	6.91	4.00	62.30	8.62	9.50	3.55
2	Matchless Stock Feed	F. W. Dorr Co.	8.26	9.70	10.00	5.78	4.00	64.89	8.09	12.00	3.28
1	Elmore Stock Feed	Elmore Milling Co.	8.11	10.42	10.00	4.02	4.00	62.01	11.11	12.00	4.33
4	Red Tag A Chop Feed	J. B. Garland & Son	8.16	12.25	7.00	4.50	3.00	61.20	10.05	14.00	3.84
3	Red Tag B Chop Feed	J. B. Garland & Son	7.61	10.64	7.00	4.79	3.00	59.90	12.45	16.00	4.61
10	Grandin's Stock Food	D. H. Grandin Milling Co.	7.58	10.20	8.50	6.89	4.00	61.54	10.10	13.00	3.69
7	Haskell's Stock Feed	W. H. Haskell & Co.	7.67	10.68	8.00	7.43	4.00	62.91	7.78	8.00	3.53
2	Colonial Feed	W. B. Herrick	7.62	13.32	12.00	3.95	6.00	60.61	10.00	8.00	4.50
1	Alfalfa Union Horse Feed, Jr.	Lexington Grain Co.	8.43	12.96	11.00	4.77	3.00	59.91	9.08	11.00	4.85
1	Alfalfa Molasses Horse Feed	Lexington Grain Co.	7.84	12.69	10.00	4.45	3.00	61.40	8.50	12.00	5.12
3	M & S. Stock Feed	Meech & Stoddard Inc.	7.88	9.16	9.00	5.66	3.00	64.39	9.75	12.00	3.16
4	Justice Stock Feed	Nowak Milling Corp.	9.60	10.37	10.00	4.75	3.00	62.89	7.60	9.00	4.79
4	Stock Feed	Park & Pollard Co.	11.10	9.50	9.00	4.19	3.00	59.68	8.32	12.00	7.21
2	Iowa Stock Feed	Purity Oats Co.	7.98	10.64	10.00	5.07	4.00	60.29	10.32	12.75	5.70

COMPLETE FODDER ANALYSES. Average.—(*Continued.*)

No. Samples	Feedstuffs.	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar	
			%	%	%	%	%	%	%	%	%
	Stock and Horse Feeds.—(*Cont'd.*)										
1	Boss Feed	Quaker Oats Co.	9.50	7.71	8.00	2.95	3.00	65.37	11.51	12.00	2.96
2	Schumacher Feed	Quaker Oats Co.	8.55	9.99	10.00	3.76	3.25	63.57	10.79	10.00	3.34
3	Schumacher Special Horse Feed	Quaker Oats Co.	9.87	9.69	9.25	3.42	3.25	64.42	9.16	8.00	3.44
5	Victor Feed	Quaker Oats Co.	8.01	9.05	8.00	4.03	3.00	63.76	11.56	12.00	3.53
2	White Diamond Feed	Quaker Oats Co.	9.24	8.57	8.00	3.03	3.25	67.47	9.19	9.00	2.44
2	Economy Stock Feed	Strafford-York Grain Co.	8.56	9.17	9.00	4.38	4.00	65.30	9.18	12.00	3.41
1	Syragold Stock Feed	Syracuse Milling Co.	7.67	9.94	10.00	2.69	3.00	62.92	12.11	12.00	4.67
1	Blue Seal Horse Feed	H. K. Webster Co.	8.67	12.87	11.00	5.63	5.00	61.96	6.93	8.00	3.94
1	Stock Feed	John J. White	8.65	9.94	10.00	4.56	4.00	60.71	12.40	13.50	3.74
2	Williams Stock Feed	M. G. Williams	8.83	14.41	11.00	5.04	4.00	56.37	10.25	12.00	5.10
3	Very Best Stock Feed	F. F. Woodward Co.	7.27	10.13	8.50	6.28	3.50	62.46	10.31	10.00	3.55
	Miscellaneous Feeds										
1	Bibby's Pig Meat	J. Bibby & Sons	10.37	14.45	12.00	2.89	4.00	56.54	9.47	10.00	6.28
1	Dried Grains (Mellen's Food Refuse)	A. H. Brown & Bros.	7.03	12.52	10.00	4.15	2.50	56.46	16.01	20.00	3.83
1	Ri-Co Feed (Rice by-product)	Lanier Bros.	7.60	12.96	13.00	14.00	14.00	42.20	12.05	9.00	11.19
7	Dried Beet Pulp	All Samples	7.99	8.52	—	0.74	—	60.80	18.97	—	2.98
1	Dried Beet Pulp with Molasses	Larrowe Milling Co.	13.62	7.55	9.00	0.31	0.50	58.54	16.42	18.00	3.56
7	Oat Feed	All Samples	5.88	5.06	—	1.88	—	54.15	27.13	—	5.90
1	Buckwheat Bran (Hulls)	St. Albans Grain Co.	6.49	7.79	—	1.44	—	47.04	33.62	—	3.62
	Molasses Feeds **Less than 15% Protein)**										
1	Sucrene Horse Feed with Alfalfa	American Milling Co.	11.98	9.62	10.00	2.60	2.50	60.92	10.26	12.00	4.62
1	Iroquois Horse Feed	Buffalo Cereal Co.	13.38	9.09	9.00	1.93	2.00	59.37	10.31	11.00	5.92
1	Iroquois Stock Feed	Buffalo Cereal Co.	15.86	8.83	8.00	4.12	3.00	56.60	8.41	11.00	6.18
1	Cloverleaf Horse Feed	Cloverleaf Milling Co.	13.32	9.90	10.00	2.13	2.00	55.50	12.24	12.00	6.91
2	Eatall Horse Feed	Feed Products Milling Co.	14.89	11.11	10.00	2.15	2.00	52.67	12.84	15.00	6.33
2	H. & S. Horse, Mule & Dairy Feed	Dwight E. Hamlin	15.91	13.86	14.00	3.88	3.50	49.02	9.95	16.00	7.38
3	Hamlin's Quality Feed	Dwight E. Hamlin	17.88	9.86	9.00	1.51	2.00	50.32	11.39	10.00	9.04
1	King Falfa Horse Feed	Howard H. Hawks Co.	19.60	11.53	9.00	1.34	3.00	46.63	11.52	15.00	9.38

COMPLETE FODDER ANALYSES. Average—(*Continued*)

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
	Molasses Feeds (Less than 15% Protein.)—(*Cont'd.*)		%	%	%	%	%	%	%	%	%
3	Algrane Horse Feed	H O Co.	12.19	11.30	11.00	3.97	4.00	58.76	8.73	10.00	5.05
1	Horse Feed with Alfalfa	H-O Co.	14.98	10.47	11.00	2.87	3.00	54.64	11.30	14.00	5.74
1	New England Stock Feed	H-O Co.	11.34	9.88	9.00	4.53	4.00	57.80	10.89	10.00	5.56
2	Kornfalfa Kandy Feed	Kornfalfa Feed Milling Co.	16.31	10.86	9.00	2.00	2.50	53.75	9.54	12.00	7.54
1	Pure Mo-Lene Horse Feed	Nowak Milling Corp.	13.95	9.70	8.00	2.41	2.00	53.66	13.20	9.00	7.08
3	Vim O Lene Horse Feed	Nowak Milling Corp	14.35	9.84	8.00	3.98	2.00	61.70	5.66	9.00	4.47
1	All Corn, Horse Feed	Omaha Alfalfa Milling Co.	14.03	10.72	10.00	2.15	2.00	56.12	10.78	12.00	6.20
2	Green Meadow Dairy Feed	Omaha Alfalfa Milling Co	16.80	8.99	11.00	0.82	1.00	48.10	16.28	25.00	9.01
2	Horse Feed	Park & Pollard Co.	15.26	10.93	9.00	1.78	2.50	49.66	13.75	12.00	8.62
2	Arab Horse Feed	M. C. Peters Mill Co.	14.94	10.56	9.00	2.06	2.00	54.40	11.87	15.00	6.17
2	Peter's Re-Peter Horse Feed	M. C. Peters Mill Co.	17.53	10.68	9.00	1.66	1.50	51.26	11.26	18.00	7.61
6	Green Cross Horse Feed	Quaker Oats Co.	16.33	10.10	10.00	2.33	2.50	54.02	11.39	12.00	5.83
2	Horse Power Feed	Quaker Oats Co.	12.91	11.07	10.00	2.41	2.80	56.30	11.84	11.00	5.47
1	Quaker Dairy Feed	Quaker Oats Co.	12.03	13.32	16.00	4.51	4.00	47.69	15.61	14.50	6.94
1	Good Luck Feed	Ralston Purina Co.	15.79	9.58	9.00	1.97	1.50	52.83	11.46	12.00	8.37
6	Purina Feed with Molasses	Ralston Purina Co.	15.79	9.34	9.30	2.53	1.70	57.37	9.04	11.70	5.93
1	Purina Sweet Feed	Ralston Purina Co.	15.25	10.12	9.00	1.34	1.00	43.18	18.66	18.00	11.45
1	Republic Horse Feed	Republic Milling Co	16.09	9.84	9.00	2.67	2.00	49.43	15.12	12.00	6.85
2	Go-To-It Horse Feed	Stanley-Harlow-Hamlin	18.71	9.28	9.00	2.09	2.00	49.38	13.14	16.00	7.40
2	Hobo Feed	Stanley-Harlow-Hamlin	16.38	12.95	8.00	3.48	1.50	48.42	12.89	14.00	5.88
4	Xtravim Feed	Xtravim Molasses Feed Co.	22.09	4.02	4.61	0.54	0.81	60.76	5.42	4.50	7.17
	Poultry Feeds										
14	Alfalfa Meal	All Samples	6.82	14.91	—	1.73	—	38.37	29.25	—	8.92
1	Cut Clover	Joseph Breck & Sons	6.77	10.86	7.91	1.82	3.36	40.14	33.49	29.84	6.92
2	Breck's Mash Food	Joseph Breck & Sons	8.06	14.41	11.50	4.15	3.50	56.91	8.73	10.00	7.74
1	A. M. C. O. Poultry Meat Mash	Amendt Milling Co.	8.51	21.76	15.50	5.27	2.50	52.82	6.92	10.00	4.72
1	Bibby's Poultry Feed	J. Bibby & Sons	7.18	16.42	12.00	6.82	4.00	55.65	7.88	10.00	6.05
1	Fill the Basket Egg Mash	Blatchford's Calf Meal Factory	7.17	21.45	19.00	4.99	4.00	49.26	7.94	10.00	9.17
3	Milk Mash	Blatchford's Calf Meal Factory	9.32	21.76	20.00	4.47	4.00	44.50	5.88	7.50	14.07
3	Buf-Ce-Co Laying Mash	Buffalo Cereal Co.	9.03	20.91	20.00	6.51	5.00	50.51	5.51	6.00	7.53

COMPLETE FODDER ANALYSES. Average.—(*Continued.*)

No. Samples	Feedstuffs.	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Poultry Feeds.—(*Continued.*)										
2	Buf-Ce-Co Poultry Mash	Buffalo Cereal Co.	9.18	16.60	15.00	5.00	4.00	60.66	5.20	6.00	3.36
1	Climax Growing Feed	E. A. Cowee Co.	6.93	15.63	14.00	3.85	4.00	57.12	8.38	5.00	8.04
2	Climax Dry Ration	E. A. Cowee Co.	7.10	20.05	20.00	4.68	3.50	51.99	7.25	10.00	8.93
3	Wirthmore Pltry. Msh. (fish& scrap)	Chas. M. Cox Co.	9.96	19.28	17.00	3.36	4.00	53.65	6.19	9.50	7.56
2	Wirthmore Poultry Mash (all grain)	Chas. M. Cox Co.	8.26	15.33	12.00	3.06	3.00	62.54	7.25	9.50	3.56
2	Elmore Egg Mash	Elmore Milling Co.	8.59	17.06	18.00	4.58	4.00	56.01	7.04	8.00	6.72
1	Blue Ribbon Laying Mash	Globe Elevator Co.	7.34	21.45	20.00	4.59	3.00	50.83	7.56	10.00	8.23
1	5% Meat Mash	Green Chicken Feed Co.	7.60	15.68	12.00	5.26	3.00	49.37	6.21	7.00	15.88
2	Purity Growing Feed	Wm. S. Hills Co.	6.05	21.11	19.00	7.27	6.00	49.33	5.66	9.00	10.53
1	Purity Poultry Mash	Wm. S. Hills Co.	6.57	17.15	17.00	5.75	4.00	56.31	6.00	10.00	8.21
1	Dry Poultry Mash	H-O Co.	8.23	19.61	18.00	4.55	3.50	52.37	10.81	9.00	4.43
5	H-O Poultry Feed	H-O Co.	8.93	18.36	17.00	4.71	4.50	57.44	6.46	9.00	4.10
1	Justice Growing Mash	Nowak Milling Corp.	9.74	16.60	15.00	3.80	5.00	53.54	5.73	7.00	5.59
1	Justice Laying Mash	Nowak Milling Corp.	9.11	20.31	20.00	5.15	3.00	43.73	6.36	10.00	15.34
1	Lay-Eg O-Dry Mash	Nowak Milling Corp.	8.14	13.10	12.00	2.58	3.00	47.50	4.55	4.00	24.13
3	Growing Feed	Park & Pollard Co.	9.23	15.31	10.00	4.13	3.50	57.94	4.83	8.00	7.96
2	Lay or Bust (Dry Mash)	Park & Pollard Co.	10.52	17.73	18.00	4.39	3.50	50.75	7.77	12.00	8.79
1	Champion Egg Mash	Arthur E. Pratt Co.	6.62	14.80	13.00	3.97	2.00	46.91	4.50	4.00	23.20
1	Pratt Baby Chick Food	Pratt Food Co.	9.26	12.78	12.00	7.63	4.00	59.46	2.38	3.00	8.44
3	Quaker Poultry Mash	Quaker Oats Co.	8.68	19.32	17.50	5.52	4.00	53.75	6.69	10.00	6.04
3	Chicken Chowder	Ralston Purina Co.	8.74	19.05	17.00	4.34	3.00	52.43	7.62	9.00	7.82
1	Wyandotte Mash Food	Ross Bros.	7.95	17.48	16.00	3.50	3.50	52.93	10.27	10.50	7.87
1	Growing & Fattening Feed	G. T. Savage Poultry Supply Co.	8.48	14.36	11.50	6.35	3.50	56.15	8.74	9.32	5.92
2	Meat Cereal	G. T. Savage Poultry Supply Co.	8.59	13.51	11.50	4.51	3.50	56.82	9.38	9.32	7.19
1	Shredded Wheat Waste	Shredded Wheat Co.	7.60	11.08	10.00	1.95	1.50	73.04	2.12	2.00	4.21

NET WEIGHTS OF FEEDING STUFFS.

In order to determine if feeders were obtaining full weight, fifty-two different lots of feeding stuffs found at various stores were weighed by the inspector during the autumn and winter of 1915-1916. The weights as found were *on the whole satisfactory.* The chief criticism was the fact that contrary to the state statute, several shippers included the weight of the sack with the feed. This makes a difference of about twenty pounds short weight to the ton. In one section of the state feeds put out by a wholesaler and packed in heavy coffee sacks were found quite generally distributed. These sacks averaged about two pounds each in weight and were included in the weight of the feed. This matter was brought to the attention of the State Department of Weights and Measures and at a later inspection it was found that the use of those sacks had been discontinued In three instances molasses feeds were found running a number of pounds short to the sack; the average shortage for the three brands being 134, 102 and 328 pounds to the ton. The Bureau of Chemistry of the United States Department of Agriculture was notified of these shipments. The inspector who investigated the matter was not able to take any action on the third lot as it was found not to have entered into interstate commerce. The local dealer, however, agreed to resack the feed and place full weight in each sack.

The work demonstrated that while the practice of giving short weight in sacked feeds was not general, it does occur occasionally and purchasers should be on their guard. If such conditions continue, *local dealers* will be held responsible, and will be liable to prosecution without further notice.

MARKET PRICES OF COMMERCIAL FEED STUFFS FOR 1915-1916.

FEED STUFFS	Average Monthly Wholesale Ton Prices—1915-1916												Average
	Sept.	Oct.	Nov.	Dec.	Jan.*	Feb.	Mar.	April	May	June	July	Aug.	
Cottonseed Meal	$32.50	$36.50	$35.25	$39.24	$38.76	$37.07	$36.03	$36.25	$35.83	$35.00	$33.75	$35.08	$36.02
Linseed Meal, (N. P. & O. P.)	38.13	38.25	39.25	41.18	41.44	39.00	35.85	31.94	31.50	32.19	34.00	37.45	36.68
Gluten Feed (Sacked)	28.50	27.75	27.00	29.52	32.44	32.50	31.07	30.18	29.98	--	28.54	31.28	29.89
Gluten Feed (Bulk)	27.33	26.50	25.83	28.16	30.00	29.58	28.63	28.03	25.83	--	26.33	29.18	28.04
Distillers Dried Grains	32.75	31.75	32.75	33.00	33.00	32.00	31.50	31.50	29.25	29.25	—	—	31.68
Malt Sprouts	—	—	—	—	--	—	—	26.50	26.50	—	—	—	26.50
Flour Middlings (Red Dog)	32.00	30.88	30.50	30.80	30.81	32.25	32.25	31.13	31.55	31.06	31.25	34.35	31.57
Standard Middlings	27.57	26.00	25.89	26.90	26.47	27.82	26.75	26.32	26.58	25.63	24.94	27.83	26.48
Mixed Feed	27.85	27.44	26.88	27.18	27.25	27.69	27.20	27.04	27.10	26.53	26.34	28.00	27.21
Bran—Spring	23.44	23.00	23.06	23.90	23.63	24.13	23.15	24.54	23.67	22.94	22.54	25.05	23.58
Bran—Winter	23.94	23.31	23.31	24.10	23.63	24.38	23.60	25.22	24.93	23.06	22.96	25.15	23.97
Hominy Meal (Sacked)	32.93	29.43	28.61	29.95	30.61	30.53	29.35	29.03	29.35	28.78	29.85	33.99	30.20
Hominy Meal (Bulk)	31.53	27.48	26.89	28.69	29.10	28.53	27.20	27.35	27.80	26.84	28.16	32.71	28.52
Corn Meal	33.20	29.60	29.40	30.80	32.20	32.20	31.60	33.00	32.60	32.40	35.20	37.60	32.48
Corn, No. 2—Yellow	31.78	27.50	27.50	30.00	30.53		—	31.60	30.71	30.53	32.85	35.35	30.84
Oats, No.2—Clipped White	26.88	27.50	27.81	31.88	35.00	35.00	32.25	33.13	32.50	24.38	31.25	33.75	30.94
Rye, No. 2	36.33	36.78	37.85	37.50	38.21	39.28	36.78	37.85	37.85	38.57	38.57	43.21	38.23
Feed Barley—(Standard)	26.25	25.63	26.77	30.42	33.34	35.58	32.59	32.29	31.25	29.59	31.25	33.75	30.73
Hay, No. 1—Large Bales	24.03	25.44	25.50	25.38	25.57	26.00	27.00	29.00	28.55	27.75	25.50	19.20	25.74
Hay, No. 2—Large Bales	21.00	22.38	22.69	22.35	23.07	23.25	24.10	26.07	24.50	24.38	22.50	19.45	22.97
Hay, No. 1—Clover mixed	17.67	17.44	18.82	17.95	17.50	17.75	18.00	19.25	17.50	17.09	16.17	14.50	17.46
Straw—Choice Rye	14.25	14.13	14.25	13.35	13.94	14.19	14.65	16.09	15.95	15.67	14.63	13.55	14.55
Straw—Oat	8.36	9.38	9.44	9.45	9.50	9.50	9.90	9.63	9.50	9.00	8.25	8.10	9.17

CONTROL SERIES. BULLETIN NO. 6. DECEMBER, 1916

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

INSPECTION OF Commercial Fertilizers

By

H. D. HASKINS, L. S. WALKER, C. P. JONES and W. A. ALLEN.

This bulletin gives a detailed report of the fertilizer inspection for 1916. It states the number of fertilizers registered and analyzed, including a discussion of the method of sampling. It provides a summary showing the average composition, cash price, as well as the pound cost of each element of plant food furnished. Special attention is called to commercial shortages existing in both unmixed fertilizing materials and in mixed fertilizers. Summary tables show the general character of the plant food contained in each manufacturer's brands of mixed complete fertilizers, and ammoniated superphosphates. The quality of the organic nitrogen in mixed fertilizers has been given special attention, and the results are shown in tables, including a list of those brands which were found to contain an inferior grade of organic nitrogen. The quality of the phosphoric acid and potash in fertilizer mixtures is also discussed. Mention is made of the number and nature of the lime products analyzed, and the influence of mechanical condition upon their activity. A summary is presented of several hundred tests of the lime requirements of Massachusetts soils. An explanation of the tables of analyses is followed by the detailed tables giving the average composition of all fertilizers and lime products sold in the State.

Requests for bulletins should be addressed to the
AGRICULTURAL EXPERIMENT STATION,
AMHERST, MASS.

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

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J. B. Lindsey, *Chemist.*

INSPECTION OF COMMERCIAL FERTILIZERS

FOR THE SEASON OF 1916.

By H. D. Haskins, *Chemist in Charge.*
Assisted by
L. S. Walker, C. P. Jones and W. A. Allen.

Manufacturers and Brands.

During the season of 1916, 108 manufacturers, importers and dealers, including the various branches of the American Agricultural Chemical Company, have secured certificates for the sale of 515 brands of fertilizer, fertilizing materials and agricultural limes in the markets of Massachusetts. The products may be classed as follows:

Complete fertilizers	222
Ammoniated superphosphates	133
Ground bone, tankage and dry ground fish	56
Wood ashes	8
Chemicals and organic nitrogen compounds	60
Agricultural limes	36
	515

An alphabetical list follows of those who have registered fertilizers and lime compounds for sale in the State during the season, together with the brands registered by each.

W. H. Abbott, Holyoke, Mass.

Abbott's Animal Fertilizer,
Abbott's Eagle Brand Fertilizer.

Alphano Humus Co., Whitehall Building, New York, N. Y.

Prepared Alphano Humus,
Sun-Cured "Natural" Humus.

American Agricultural Chemical Co., 92 State Street, Boston, Mass.

Bradley's Complete Manure for Corn and Grain, 1916,
Bradley's Complete Manure for Potatoes and Vegetables, 1916,
Bradley's Complete Manure for Top Dressing Grass and Grain, 1916,
Bradley's Corn Phosphate, 1916,
Bradley's Eclipse Phosphate, 1916,
Bradley's English Lawn Fertilizer,1916,
Bradley's Potato Fertilizer, 1916,
Bradley's Potato Manure, 1916,
Bradley's Special Niagara Phosphate,
Bradley's XL Superphosphate of Lime, 1916,
Church's Fish and Potash D, 1916,
Clark's Cove Bay State Fertilizer,1916,
Clark's Cove Bay State Fertilizer GG, 1916,
Clark's Cove Great Planet Manure AA, 1916,
Clark's Cove Potato Fertilizer, 1916,
Clark's Cove Potato Manure, 1916,
Darling's Animal Fertilizer, 1916,
Darling's Blood, Bone and Potash, 1916,

Darling's Farm Favorite, 1916,
Darling's General Fertilizer, 1916,
Darling's Potato Manure, 1916,
Farquhar's Fine Ground Bone,
Farquhar's Lawn and Garden Dressing, 1916,
Farquhar's Vegetable and Potato Fertilizer, 1916,
Great Eastern Garden Special, 1916,
Great Eastern General, 1916,
Great Eastern Northern Corn Special, 1916,
Great Eastern Potato Manure, 1916,
Soluble Pacific Guano, 1916,
Pacific High Grade General Fertilizer, 1916,
Pacific Potato Special, 1916,
Packers' Union Animal Corn Fertilizer, 1916,
Packers' Union Potato Manure, 1916,
Packers' Union Universal Fertilizer, 1916,
Quinnipiac Corn Manure, 1916,
Quinnipiac Market Garden Manure, 1916,
Quinnipiac Phosphate, 1916,
Quinnipiac Potato Manure, 1916,
Quinnipiac Potato Phosphate, 1916,
Read's Farmers' Friend Superphosphate, 1916,
Read's High Grade Farmers' Friend Superphosphate, 1916,
Read's Practical Fertilizer, 1916,
Read's Vegetable and Vine Fertilizer, 1916,
Standard Complete Manure, 1916,
Standard Fertilizer, 1916,
Standard Guano, 1916,
Standard Special for Potatoes, 1916,
Wheeler's Corn Fertilizer, 1916,
Wheeler's Havana Tobacco Grower, 1916,
Wheeler's Potato Manure, 1916,
Williams & Clark Americus Ammoniated Bone Superphosphate, 1916,
Williams & Clark Americus Corn Phosphate, 1916,
Williams & Clark Americus High Grade Special for Potatoes and Root Crops, 1916,
Williams & Clark Americus Potato Manure, 1916,
Williams & Clark Royal Bone Phosphate, 1916,
Williams & Clark Special Prolific Crop Producer,
A A Potato Grower, 1916,
Ammoniated Fertilizer A,
Ammoniated Fertilizer AA,
Ammoniated Fertilizer AAA,
Ammoniated Fertilizer AAAA,
Ammoniated Fertilizer AAAAA,
Basic Lime Phosphate,
Complete Tobacco Manure, 1916,
Dry Ground Fish,
Fine Ground Bone,
Fine Ground Nova Scotia Plaster,
Grass and Lawn Top Dressing, 1916,
Great Harvester Potato Manure, 1916,
Ground Tankage (4.94%),
Ground Tankage (7.41%),
Ground Untreated Phosphate Rock,
High Grade Dried Blood,
High Grade Fertilizer, 1916,
High Grade Top Dressing without Potash,
Nitrate of Soda,
Plain Superphosphate (14%),
Plain Superphosphate (16%),
Special Grass and Garden Mixture, 1916,
Sulphate of Ammonia,
Top Dresser, 1916,
Valley Special Complete Fertilizer, 1916.

Andrews & Spelman Co., 173 Dorrance St., Providence, R. I.

Canada Unleached Wood Ashes.

Armour Fertilizer Works, 930 Equitable Building, Baltimore, Md.

Armour's 3–8–1,
Armour's 4–8–1,
Armour's 4–8–2,
Armour's 3½–8–1,
Armour's 4–11–0,
Armour's 5–10–0,
Acid Phosphate,
Bone Meal,
Fish and Potash No. 2,
Grain Grower,
Nitrate of Soda,
Special Tobacco Grower No. 1,
Star Phosphate,
Wheat, Corn and Oats Special.

Baugh & Sons Co., 20 S. Delaware Ave., Philadelphia, Pa.

Baugh's Complete Animal Base Fertilizer,
Baugh's Fine Ground Bone,
Baugh's Grand Rapid High Grade Guano,

Baugh's High Grade Ammoniated Animal Base,
Baugh's High Grade Potato Grower,
Baugh's Old Standby: Dissolved Animal Base,
Baugh's Raw Bone Meal,—Warranted Pure,
Nitrate of Soda.

Beach Soap Co., Lawrence, Mass.

Beach's Advance Fertilizer,
Beach's Fertilizer Bone,
Beach's Lawn Dressing Fertilizer,
Beach's Market Garden Fertilizer,
Beach's Reliance Fertilizer,
Beach's Top Dressing Fertilizer.

Berkshire Fertilizer Co., Bridgeport, Conn.

Berkshire Ammoniated Bone Phosphate,
Berkshire Complete Fertilizer,
Berkshire Dry Ground Fish,
Berkshire Economical Grass Fertilizer,
Berkshire Grass Special,
Berkshire Long Island Special,
Berkshire Market Garden Fertilizer,
Berkshire Potato and Vegetable Phosphate,
Berkshire Root Fertilizer,
Berkshire Tobacco Grower,
Berkshire Tobacco Special.

Berkshire Hills Co., Sheffield, Mass.

Agricultural Lime.

E. B. Blood Co., Brockton, Mass.

Electric Cut Worm Repeller and Fertilizer.

Boston Humus Co., 101 Massachusetts Ave., East Lexington, Mass.

Boston Humus,
Boston Plant Life,
Natural Humus.

Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.

Bowker's Acid Phosphate (16%),
Bowker's All Round Fertilizer, 1916,
Bowker's Ammoniated Food for Flowers,
Bowker's Blood, Bone and Potash, 1916,
Bowker's Brighton Phosphate,
Bowker's Complete Alkaline Tobacco Grower, 1916,
Bowker's Corn Phosphate, 1916,
Bowker's Dried Blood,
Bowker's Dry Ground Fish,
Bowker's Farm and Garden Phosphate, 1916,
Bowker's Fine Ground Bone Tankage,
Bowker's Fine Ground Nova Scotia Plaster,
Bowker's Fresh Ground Bone,
Bowker's Ground Untreated Phosphate Rock,
Bowker's High Nitrogen Mixture, 1916,
Bowker's Hill and Drill Phosphate, 1916,
Bowker's Lawn and Garden Dressing, 1916,
Bowker's Nitrate of Soda,
Bowker's Potato Phosphate, 1916,
Bowker's Soluble Phosphate,
Bowker's Superphosphate with Ammonia 1%,
Bowker's Superphosphate with Ammonia 2%,
Bowker's Superphosphate with Ammonia 3%,
Bowker's Sure Crop Phosphate, 1916,
Bowker's Tobacco Grower, 1916,
Stockbridge Cereal Manure without Potash, 1916,
Stockbridge Early Crop Manure, 1916,
Stockbridge General Crop Manure, 1916.

Joseph Breck & Sons Corp., 51-52 N. Market St., Boston, Mass.

Breck's High Grade Wood Ashes,
Breck's Lawn and Garden Dressing, 1916,
Breck's Market Garden Manure, 1916,
Breck's Ram's Head Brand Sheep Manure.

F. W. Brode & Co., 40 S. Front St., Memphis, Tenn.

Owl Brand Cottonseed Meal.

Edward Bryant Co., 23 Central St., Boston, Mass.

Agricultural Lime,
Lime and Wood Ashes.

Buckeye Cotton Oil Co., Cincinnati, O.

Buckeye Cottonseed Meal.

Carter's Tested Seeds, Inc., 102 Chamber of Commerce, Boston, Mass.

Carter's Anti-Clover Manure,

Carter's Complete Grass Manure.
Carter's General Purposes Manure,
Carter's Worm Eradicating Fertilizer.

Cheshire Lime Manufacturing Co., Cheshire, Mass.

Cheshire Agricultural Lime.

The E. D. Chittenden Co., Bridgeport, Conn.

Chittenden's Dry Ground Fish.
Chittenden's Grass and Grain, 1% Potash,
Chittenden's Potato and Grain, 1% Potash,
Chittenden's Potato Special, 2% Potash,
Chittenden's Tobacco and Onion Grower, 2% Potash,
Chittenden's Tobacco and Onion Grower, without Potash,
Chittenden's Tobacco Special, 2% Potash,
Chittenden's Tobacco Special, without Potash,
Chittenden's Vegetable and Onion Grower, 1% Potash,
Chittenden's Vegetable and Onion Grower, without Potash.

Clay & Sons, Stratford, London, Eng.

Clay's Fertilizer.

The Coe-Mortimer Co., 51 Chambers St., New York, N. Y.

E. Frank Coe's Basic Fruit and Legume Phosphate, (Basic Lime Phosphate), (Key-Plow Brand),
E. Frank Coe's Columbian Corn and Potato Fertilizer, 1916,
E. Frank Coe's Excelsior Potato Fertilizer, 1916,
E. Frank Coe's Gold Brand Excelsior Guano, 1916,
E. Frank Coe's High Grade Ammoniated Superphosphate, 1916,
E. Frank Coe's High Grade Soluble Phosphate,
E. Frank Coe's Ideal Tobacco Fertilizer, 1916,
E. Frank Coe's Ideal Tobacco Fertilizer, without Potash,
E. Frank Coe's Morco Top Dresser, 1916,
E. Frank Coe's New Englander Special, 1916,
E. Frank Coe's Original Ammoniated Dissolved Phosphate, 1916,
E. Frank Coe's Prolific Crop Producer, 1916,
E. Frank Coe's Red Brand Excelsior Guano, 1916,
E. Frank Coe's Standard Potato Fertilizer, 1916,
E. Frank·Coe's 16% Superphosphate,
E. Frank Coe's Universal Fertilizer, 1916,
E. Frank Coe's XXV Ammoniated Phosphate, 1916,
Fine Ground Bone,
Ground Tankage (6-30),
High Grade Dried Blood,
Nitrate of Soda.

F. E. Conley Lime&Fert. Co.,Utica,N.Y.

Raw Ground Lime.

J. A. Creighton & Co., Thomaston, Me.

Agricultural Lime.

S. P. Davis, Little Rock, Ark.

Good Luck Cottonseed Meal.

John C. Dow Co., 13-14 Chatham St., Boston, Mass.

Dow's Ground Tankage,
Dow's Pure Ground Bone.

Eastern Chemical Co., Jamaica Plain, Mass.

I M P Plant Food.

Edison Pulverized Limestone Co., Stewartsville N. J.

Edison Pulverized Limestone.

Essex Fertilizer Co., 39 N. Market St., Boston, Mass.

Essex Corn and Vegetable,
Essex Grain, Grass and Potato Fertilizer,
Essex High Grade Special,
Essex Manure for Corn, Grain and Grass,
Essex Manure for Potatoes, Roots and Vegetables,
Essex Market Garden and Potato Manure,
Essex New Tobacco Fertilizer,
Essex Potato Grower,
Essex Potato Phosphate,
Essex Special Potato,
Essex Tobacco Manure,
Essex XXX Fish Fertilizer.

Farnam Cheshire Lime Co., Farnams, Mass.

Agricultural Lime.

R. & J. Farquhar & Co., 6 and 7 S. Market St., Boston, Mass.

Canada Hardwood Ashes,
Purity Brand Pulverized Sheep Manure.

T. H. Frauley, Newport, R. I.

Unleached Wood Ashes.

John Glennie, North Andover, Mass.

Superphosphate.

Grangers Lime & Marble Co., West Stockbridge, Mass.

Grangers Lime.

Hampton Co., Easthampton, Mass.

Precipitated Lime.

Herbert Harris, Lime Rock, R. I.

Ground Limestone,
Slaked Lime.

Charles W. Hastings, Stoughton, Mass.

Ferti-Flora.

Thos. Hersom & Co., New Bedford, Mass.

Bone Meal,
Meat and Bone,
No. 1 Mixture.

A. W. Higgins, Westfield, Mass.

Acid Phosphate,
Bone Flour,
Castor Meal,
Concentrated Tankage,
Cyanamid,
Dry Fish,
Nitrate of Soda,
Sulfate of Ammonia.

Home Soap Co., Worcester, Mass.

Pure Ground Bone,
Tankage.

The Hoosac Co., North Adams, Mass.

Ground Limestone.

Hoosac Valley Lime & Marble Co. Inc., Adams, Mass.

Adams Agricultural Lime,
Adams Lime Kiln Ashes.

Hudson Carbon Co., Ballston Spa, N. Y.

Davidge's Special Phosphorus.

Humphreys-Godwin Co., 20 N. Front St., Memphis, Tenn.

Bull Brand Cottonseed Meal,
Dixie Brand Cottonseed Meal,
Topsy Brand Cottonseed Meal.

International Agricultural Corporation, (Buffalo Fertilizer Works, Branch), Buffalo, N. Y.

Buffalo 16% Acid Phosphate,
Buffalo Ammoniated Phosphate,
Buffalo Bone Meal,
Buffalo Dry Ground Fish,
Buffalo Economy,
Buffalo Farmers' Choice,
Buffalo Garden Truck,
Buffalo General Favorite,
Buffalo High Grade Manure,
Buffalo New England Special,
Buffalo Onion and Fruit,
Buffalo Tobacco Producer,
Buffalo Top Dresser,
Buffalo Vegetable and Potato,
Ames Complete Grass Manure,
Lime Carbonate (Marl Lime).

John Joynt, Lucknow, Ontario, Can.

Canada Hardwood Ashes.

F. R. Lalor, Dunnville, Ontario, Can.

Lalor Brand Hardwood Ashes.

Listers Agricultural Chemical Works, Newark, N. J.

Listers Bone Meal, 1916,
Listers Buyers' Choice Acid Phosphate,
Listers Celebrated Onion Fertilizer, 1916,
Listers Complete Tobacco Manure, 1916, (From Sulphate),
Listers Corn and Potato Fertilizer, 1916,
Listers Crescent Ammoniated Superphosphate, 1916,
Listers Excelsior Guano, 1916,
Listers High Grade Special for Spring Crops, 1916,
Listers Plant Food, 1916,
Listers Potato Manure, 1916,
Listers Special Tobacco Fertilizer, 1916,

Listers Standard Grass Fertilizer, 1916,
Listers Standard Pure Superphosphate of Lime, 1916,
Listers Success Fertilizer, 1916,
Listers Superior Ammoniated Superphosphate, 1916,
Fine Ground Nova Scotia Land Plaster,
Sulphate of Ammonia.

Lowell Fertilizer Co., 40 N. Market St., Boston, Mass.

Lowell Animal Brand,
Lowell Bone Fertilizer,
Lowell Corn and Vegetable,
Lowell Empress Brand,
Lowell Ground Animal Tankage,
Lowell Ground Bone,
Lowell Market Garden Special Grass and Lawn Dressing,
Lowell Potato Manure,
Lowell Potato Phosphate,
Lowell Potato and Vegetable,
Lowell Sterling Phosphate,
Lowell Tobacco Grower for Tobacco, Fruit and Vine.

James E. McGovern, Andover, Mass.

Andover Animal Fertilizer.

Mapes Formula & Peruvian Guano Co., 143 Liberty St., New York, N. Y.

Mapes Cereal Brand (War Special),
Mapes Corn Manure (War Brand),
Mapes General Crop (War Special),
Mapes General Special (War Brand),
Mapes Potato Manure (War Brand),
Mapes Tobacco Manure, (War Brand),
Mapes Tobacco Starter, Improved,
Mapes Top Dresser, Full Strength, (War Brand),
Mapes Top Dresser, Half Strength, (War Brand).

George E. Marsh Co., Lynn, Mass.

Marsh's Pure Ground Bone Meal.

Missisquoi Lime Works, (L. H. Felton Est.,) Highgate Springs, Vt.

Lime Ashes.

W. L. Mitchell, New Haven, Conn.

Hardwood Ashes.

The Mitchell Fertilzer Co., 26 S. Water St., Providence, R. I.

Mitchell's Vegetable Fertilizer.

C. L. Montgomery & Co., Falls Building, Memphis, Tenn.

Canary Brand Cottonseed Meal.

National Fertilizer Co., 92 State St., Boston, Mass.

National Ammoniated Phosphate, 1916,
National Complete Root and Grain Fertilizer, 1916,
National Eureka Potato Phosphate, 1916,
National High Grade Top Dressing, 1916,
National Market Garden Fertilizer. 1916,
National Nitrogen Phosphate Mixture No. 2,
National Nitrogen Phosphate Mixture No. 3,
National Nitrogen Phosphate Mixture No. 4,
National Nitrogen Phosphate Mixture No. 5,
National Potato Phosphate, 1916,
National Premium Fertilizer, 1916, (Sulfate),
National Special Complete Fertilizer. 1916,
National Tobacco Special, 1916, (Sulfate),
National Tobacco Special, without Potash,
National XXX Fish and Potash, 1916.

Natural Guano Co., Aurora, Ill.

"Sheep's Head" Pulverized Sheep Manure.

Nature's Plant Food Co., 12 S. Market St., Boston, Mass.

Nature's Plant Food.

New England Dressed Meat & Wool Co., 41 N. Market St., Boston, Mass.

Bone Fertilizer.

New England Fertilizer Co., 40A N. Market St., Boston, Mass.

New England Complete Manure,
New England Corn and Grain Fertilizer,
New England Corn Phosphate,
New England High Grade Potato Fertilizer,
New England Potato Fertilizer,
New England Potato and Vegetable,

New England Special Onion,
New England Special Tobacco,
New England Superphosphate,
New England Tobacco Grower.

New England Lime Co., Danbury, Ct.

Adams (Mass.) Agricultural Lime,
Adams (Mass.) Fresh Burned Granulated Lime,
Canaan (Conn.) Lime Ashes,
Connecticut Agricultural Lime,
Ground Agricultural Limestone.

New England Phosphate Co., 107 University Road, Brookline, Mass.

Natural Rock Phosphate.

Nitrate Agencies Co., 28 Bridge St., New York, N. Y.

Dried Blood,
Ground Bone,
Ground Tankage,
High Grade Acid Phosphate (14%),
High Grade Acid Phosphate (16%),
High Grade Genuine Peruvian Guano,
Nitrate of Soda,
Pescadores High Grade Genuine Peruvian Guano.

Olds & Whipple, Hartford, Conn.

Olds & Whipple's Castor Pomace,
Olds & Whipple's Complete Onion, Corn and Potato Fertilizer,
Olds & Whipple's Complete Tobacco Fertilizer,
Olds & Whipple's Dry Ground Fish,
Olds & Whipple's High Grade Starter,
Olds & Whipple's Special Onion Fertilizer,
Olds & Whipple's Special Onion Fertilizer (Less Potash),
Olds & Whipple's Tobacco Special,
Acid Phosphate,
Agricultural Lime,
Precipitated Bone.

Carroll S. Page, Hyde Park, Vt.

Raw Ground Bone.

Parmenter & Polsey Ferilizer Co., 40 N. Market St., Boston, Mass.

Parmenter & Polsey AA Brand,
Parmenter & Polsey Corn and Grain Fertilizer,
Parmenter & Polsey Plymouth Rock Brand Fertilizer,
Parmenter & Polsey Potato Fertilizer,
Parmenter & Polsey Special Potato Fertilizer,
Parmenter & Polsey Special Tobacco Grower,
Parmenter & Polsey Star Brand Superphosphate.

Pownal Lime Co., 92 State St., Boston, Mass.

Fine Ground Limestone.

R. T. Prentiss, Holyoke, Mass.

R. T. Prentiss for Potatoes,
R. T. Prentiss for Top Dressing.

Pulverized Manure Co., 828 Exchange Ave., Chicago, Ill.

Wizard Brand Cattle Manure,
Wizard Brand Mixed Manure,
Wizard Brand Sheep Manure.

Raw Products Co., 21-23 S. Market St., Boston, Mass.

Florida Raw Ground Phosphate.

Reading Bone Fertilizer Co., Reading, Pa.

Reading All Crop Special,
Reading Prize Winner,
Reading Special Grain and Grass Producer,
Reading Special Potato and Tobacco Manure,
16% Acid Phosphate,
Farmers' Tankage and Potash,
Truck, Fruit, Tree, Vine, Potato and Tobacco Grower.

Rockland & Rockport Lime Co., Rockland, Maine.

R. R. Ground Limestone,
R. R. Land Lime.

Rogers & Hubbard Co., Middletown, Conn.

Hubbard's "Bone-Base" Oats and Top Dressing,
Hubbard's "Bone–Base" Soluble Corn and General Crops Manure,
Hubbard's "Bone-Base" Soluble Potato Manure,
Hubbard's "Bone-Base" Soluble Tobacco Manure,
Hubbard's Pure Raw Knuckle Bone,
Hubbard's Strictly Pure Fine Bone,
Hubbard's Tobacco Special,

Rogers' All Soils —All Crops Phosphate,
Rogers' Complete Phosphate,
Rogers' High Grade Oats and Top Dressing,
Rogers' High Grade Soluble Corn and Onion Manure,
Rogers' High Grade Soluble Tobacco Manure,
Rogers' High Grade Soluble Tobacco and Potato Manure,
Rogers' Potato Phosphate,
Rogers' Pure Raw Knuckle Bone,
Rogers' Strictly Pure Fine Bone,
Rogers' Tobacco Grower, Vegetable Formula,
Rogers' & Hubbard's All Soils—All Crops Phosphate,
Rogers' & Hubbard's Complete Phosphate,
Roger's & Hubbard's Potato Phosphate.

Ross Bros. Co., 88 Front St., Worcester, Mass.

Corn, Grass and Grain Fertilizer,
High Grade Potato and Vegetable Fertilizer,
Lime Kiln Ashes,
Nitrate of Soda,
Potato and Vegetable Fertilizer,
Spring Grass Top Dressing,
Worcester Lawn Dressing.

F. S. Royster Guano Co., 1604 Munsey Building, Baltimore, Md.

Royster's Arrow Head Tobacco Fertilizer,
Royster's Cuckoo Crop Grower,
Royster's Curfew Ammoniated Superphosphate,
Royster's Defender Fertilizer,
Royster's Drillwell Phosphate,
Royster's Fine Ground Bone Meal,
Royster's Good-Will Ammoniated Superphosphate,
Royster's High Grade 16% Acid Phosphate,
Royster's Innovation Ammoniated Superphosphate,
Royster's Log Cabin Guano,
Royster's Logical Compound,
Royster's New Life Compound,
Royster's Penguin Ammoniated Superphosphate,
Royster's Pipe of Peace Tobacco Fertilizer,
Royster's Valley Tobacco Compound,
Royster's Vim Top Dresser,
Dry Ground Fish,
Nitrate of Soda,
Slaughter House Tankage.

J. W. Sanborn, Pittsfield, N. H.

Prof. Sanborn's Chemical for Grass and Grain,
Prof. Sanborn's Chemical for Potatoes and Corn,
Prof. Sanborn's Chemical for Use in Hill or Drill.

Sanderson Fertilizer & Chemical Co., New Haven, Conn.

Sanderson's Atlantic Coast Bone, Fish and Potash, 1916,
Sanderson's Basic Lime Phosphate,
Sanderson's Complete Tobacco Grower, 1916,
Sanderson's Corn Superphosphate, 1916,
Sanderson's Double Strength Ammonia Mixture,
Sanderson's Fine Ground Fish,
Sanderson's Formula A, 1916,
Sanderson's Formula B, 1916,
Sanderson's High Grade Ammoniated Phosphate,
Sanderson's Phosphate without Potash,
Sanderson's Plain Superphosphate,
Sanderson's Potato Manure, 1916,
Sanderson's Special without Potash,
Sanderson's Top Dressing for Grass and Grain, 1916,
Sanderson's Top Dressing for Grass and Grain without Potash.

M. L. Shoemaker & Co. Ltd., Venango St. & Delaware Ave., Philadelphia, Pa.

Swift-Sure Bone Meal,
Swift-Sure Superphosphate for Tobacco and General Use.

J. E. Soper & Co., 206 Chamber of Commerce, Boston, Mass.

"Pilgrim" Cottonseed Meal,
"Pioneer" Cottonseed Meal.

Springfield Rendering Co., Springfield, Mass.

Springfield Animal Fertilizer for all Crops,

Springfield Ground Bone,
Springfield Ground Tankage,
Springfield High Grade Dressing,
Springfield Special Potato and Vegetable,
Brightwood Potato and Vegetable Grower.

Stearns Lime Co., Danbury, Conn.

Ground Limestone for Soil Improvement.

W. J. Tavender, 14 Paisley Park, Boston, Mass.

Am-Pho-Nite.

Tennessee Coal, Iron and Railroad Co., Brown-Marx Building, Birmingham, Ala.

Duplex Basic Phosphate "AA".

Wm. Thomson & Son, Ltd., Clovenfords, Scotland.

Thomson's Vine, Plant and Vegetable Manure,
Thomson's Special Chrysanthemum Manure.

Tidewater Portland Cement Co., Calvert Building, Baltimore, Md.

Tidewater Hydrated Lime,
Tidewater Lump Lime.

Tobey Lime Co., West Stockbridge, Mass.

Agricultural Lime.

20th Century Specialty Co., 317 Adams St., Boston, Mass.

"Scientific" 12 L.

Union Seed & Fertilizer Co., 27 Beaver St., New York, N. Y.

American Red Tag Cottonseed Meal.

Vermont Marl Co., Brattleboro, Vt.

Wood Ashes.

Virginia-Carolina Chemical Co., 24 Broad St., New York, N. Y.

V. C. C. Co.'s Beef, Blood and Bone "BBB" (1% Potash),
V. C. C. Co.'s High Grade Corn and Vegetable Compound,
V. C. C. Co.'s Indian Brand for Tobacco No. 1, (C. S. M. with Sulfate),
V. C. C. Co.'s Indian Brand for Tobacco No. 2, (C. S. M. with Sulfate),
V. C. C. Co.'s National Corn, Grain and Grass Top-Dressing (1% Potash),
V. C. C. Co.'s Owl Brand Potato Fertilizer,
V. C. C. Co.'s Star Brand Potato and Vegetable Compound (2% Potash),
V. C. C. Co.'s Tobacco and Onion Special,
V. C. C. Co.'s XXX Fish and Potash.

West Stockbridge Lime Co., West Stockbridge, Mass.

Agricultural Lime.

Whitman & Pratt Rendering Co., 15 Exchange St., Boston, Mass.

Whitman & Pratt's 2½-10,
Whitman & Pratt's 3-10,
Whitman & Pratt's 3-8-1,
Whitman & Pratt's 4-8-1,
Whitman & Pratt's 5-10,
Whitman & Pratt's 5-9-1,
Whitman & Pratt's Ground Bone.

Wilcox Fertilizer Co., Mystic, Conn.

Wilcox Complete Bone Phosphate,
Wilcox Corn Special,
Wilcox Fish and Potash,
Wilcox Grass Fertilizer,
Wilcox High Grade Vegetable Fertilizer,
Wilcox Potato Fertilizer,
Wilcox Potato, Onion and Vegetable Phosphate,
Wilcox Special Superphosphate,
Wilcox Tobacco Special,
Acid Phosphate,
Dry Ground Fish Guano,
Fine Ground Animal Tankage,
Nitrate of Soda,
Pure Ground Bone.

S. Winter Co., Brockton, Mass.

Pure Ground Bone.

A. H. Wood & Co., Framingham, Mass.

Wood's 3-7-1 Fertilizer.

J. M. Woodard, Greenfield, Mass.

Unground Tankage.

Worcester Rendering Co., Worcester, Mass.

Royal Worcester Corn and Grain Fertilizer,
Royal Worcester Ground Steamed Bone,
Royal Worcester Potato and Vegetable Fertilizer,
Fine Ground Tankage.

Collection of Samples. This important part of the fertilizer inspection has been in charge of our regular inspector, who has had eight years' experience. He has been assisted in this work by two other men, one of whom has had three years' experience in collection work.

Sampling in Advance of Regular Season. Arrangements were made, as in the past, to sample carloads of wood ashes, cottonseed meal and chemicals, as well as mixed fertilizers, upon call from the purchaser. Many of these calls came in early winter, when the regular inspector was otherwise engaged, in which case it was necessary to employ one of the assistant chemists, or someone especially trained for the work, and the owner or purchaser of the fertilizer was asked to pay the traveling expenses of the sampler. These early shipments are usually either cash purchases or to be paid for upon analysis. The samples are, therefore, promptly analyzed and reported. The demand for this work necessitates, in some cases, a relatively large number of analyses of the same brand, as the carload becomes a unit. Some of the shippers of cottonseed meal have recognized that the analysis of a large number of samples is somewhat burdensome and have, at our request, reimbursed the station to the extent of $2.00 for each carload analyzed, allowance being made for the testing of four samples in payment for the regular registration fee of $8.00. The Humphreys-Godwin Company and the Union Seed & Fertilizer Company have co-operated with the station in this work, as they seem to be the largest shippers of cottonseed meal for fertilizing purposes.

Samples taken in Duplicate. In the collection of all fertilizer samples, duplicates are always taken and one sealed sample is preserved for the use of the manufacturer or shipper. It is also planned to sample each brand in several localities, if possible, so as to make use of a composite sample in the analytical work, as it is believed that the larger the tonnage sampled, the more representative is the inspection.

Method of Sampling. During the year considerable discussion has taken place among the manufacturing chemists as to the nature of the sampling tube used in drawing samples for the inspection work in the different States, and a tube was recommended which terminated in a point and which could be opened and closed after insertion in the bag. A tube of this type was given a trial in Massachusetts during 1913-1914, and its use was discontinued on account of the lodging of small particles of fertilizer between the movable parts of the tube. The tube which has been used at this station with entire satisfaction is open at the end, which is sharp and elliptical in shape. About three-fourths of an inch from the lower end, a slit about one-fourth of an inch wide is made, running up the tube to within a few inches of the handle. In making this slit the metal is slightly bent out, filed and polished to a knife edge, so that upon insertion into the bag it may be turned around several times if necessary to insure a perfect core its entire length. The tube, being open at the end, insures perfect and rapid cleaning after each sampling, by means of a long-handled bristle brush. It is felt that this instrument is better adapted for the work than one which is closed at the end.

Statistics of Sampling. The following data in regard to the 1916 collection may be of interest: sacks sampled 22,122, representing 9,668 tons of fertilizer; 155 towns were visited; 1,398 samples, representing 548 distinct brands, were drawn from stock found in the possession of 414 different agents or owners.

Fertilizers Analyzed. Eight hundred analyses (552 distinct brands) have been made during the year's inspection. They are as follows:

Complete Fertilizers	275
Ammoniated superphosphates	177
Ground bone, tankage and dry ground fish	95
Nitrogen compounds	132
Phosphoric acid compounds	32
Wood ashes	48
Lime Compounds	41
	800

Fertilizer Trade Values. It has been customary for many years to publish in the annual bulletin a table of trade values of fertilizing ingredients, as adopted by representatives of the experiment stations of New England, New York and New Jersey. These values were fixed by computing the average cost per pound, at retail, for the six months preceding March 1, of nitrogen, phosphoric acid and potash as furnished by standard raw materials and chemicals in the markets of New England and New York. Both wholesale and retail prices were studied before the final adoption of the trade values. There has always been more or less fluctuation from month to month in the prices of various forms of crude stock materials. Yet in the past they have not been so abnormal but that reasonable averages could be established. The prices during the last few months of 1915 and during 1916 have been quite unusual. Some of the materials have shown a remarkable advance, while in case of the potash salts, prices were prohibitive. The following table will give some idea of the wide fluctuation existing in the market in crude stock fertilizing materials during the season.

Name of Material.	Wholesale Ton Quotations Taken from the Oil, Paint and Drug Reporter.		Manufacturers Retail Quotations. Average of Several. Made in Feb. 1916
	Sept. 1915	Feb. 1916	
Ammonium Sulfate,	$67.60	$77.00	$79.25
Nitrate of Soda,	48.80	71.40	74.38
Dried Blood,	32.28	38.64	59.00
Tankage (9 and 20),	22.70	29.90	38.33
Dry Ground Fish,	Not quoted.	Not quoted.	51.00
Cottonseed Meal,	32.50	37.07	39.50*
Acid Phosphate (15%),	7.50	12.38	17.22
Muriate of Potash,	248.00	468.00	Not quoted.
High Grade Sulfate of Potash,	208.00	350.00	Not quoted.

*Cottonseed meal guaranteed 6.17% nitrogen was offered in September, 1916, for $33.50; December 1, 1916 for $46.00 cash.

From the above it is quite evident that no average of trade values could have been established that would have been satisfactory on account of the wide fluctuating prices which prevailed. At the annual meeting of experiment station representatives held last March, these conditions were carefully considered, and it was finally voted unanimously to omit the establishment of a table of trade values for the season of 1916.

General Information Concerning Registered Raw Products and Chemicals.

Ground Bone. Seventy-two samples have been inspected during the season, necessitating thirty-nine analyses. Ground bone has averaged 3.02 per cent of nitrogen, 74.18 per cent of which has been found active by the laboratory method (alkaline permanganate). The average phosphoric acid was 24.82 per cent. The average retail cash price has been $37.91 per ton. The guarantees on bone were, on the average, well maintained, only one brand showing a serious commercial shortage.

Baugh & Sons Co. Raw Bone Meal, Nos. 218-339. Nitrogen found 3.54%, guaranteed 3.70%; phosphoric acid found 21.23%, guaranteed 21.50%.

Ground Tankage. Thirty-five samples of tankage have been inspected, necessitating twenty-nine analyses. Five of these samples were found deficient in nitrogen. The average total nitrogen found was 7.93 per cent, of which 81.67 per cent has been found active by the laboratory method. The average phosphoric acid found was 12.49 per cent. The average retail cash price has been $43.27 per ton. Assuming that the pound of phosphoric acid in tankage is worth four cents, the cost of the pound of nitrogen from this source would have been twenty-one cents. Three brands were found to have rather serious commercial shortages.

Home Soap Co., Tankage No. 863. Nitrogen found 4.51%, guaranteed 11.00%; phosphoric acid found 20.37%, guaranteed .68%.

Another sample of this brand, No. 1341, ran about the same in composition,—4.64% nitrogen and 19.80% phosphoric acid being found.

As soon as this shortage was discovered, the sales of the product were suspended until a thorough investigation could be made. The evidence accumulated indicated that the company, which grinds only a small amount of bone and tankage, which are by-products from rendering fat for soap manufacture, had submitted a sample for analysis and the report showed the high nitrogen which was guaranteed, the assumption being that the product would run constant in composition. New tags, bearing a revised guarantee, were secured by the company, and affixed to the stock on hand and in possession of agents, and sales of the product were allowed to continue. There was no evidence secured which would indicate a disposition to misrepresent, but rather an error in judgment in assuming that one analysis would give sufficient analytical data upon which to base a statement of guarantee. The company was cautioned and advised to have more frequent analyses made in order to keep a closer check on the variation in composition of the product.

The other two brands which have been mentioned as showing commercial shortages are not as serious cases as the one just reviewed.

Lowell Fertilizer Co., Lowell Animal Tankage, Nos. 159-162. Nitrogen found 4.69%, guaranteed 4.92%; phosphoric acid found 14.29%, guaranteed 14.00%.

Springfield Rendering Co., Ground Tankage, No. 1232. Nitrogen found 6.56%, guaranteed 7.40%; phosphoric acid found 15.51%, guaranteed 12.00%.

Dry Ground Fish. Thirty samples of fish were inspected, necessitating nineteen analyses. One was found deficient in nitrogen, and three in phosphoric acid. The average retail cash price has been $52.46 per ton. The average total nitrogen found was 8.35 per cent, of which 72.10 per cent was found active by the laboratory method. The average per cent of phosphoric acid was 5.04. Allowing four cents as the value of a pound of phosphoric acid, the nitrogen in dry ground fish has cost on the average twenty-eight cents per pound. Only one brand was found to have a commercial shortage.

Berkshire Fertilizer Co., Dry Ground Fish, Nos. 137-369-704. Nitrogen found 7.97%, guaranteed 8.23%; phosphoric acid found 6.56%, guaranteed 6.00%.

Dried Blood. Six samples of dried blood, representing four brands, have been inspected. Six analyses were made and all were found to be well up to the guarantee. Dried blood has cost, on the average, $56.67 per ton. The average per cent of nitrogen found in this product has been 11.08, 77.34 per cent of which was found active. The average per cent of phosphoric acid was 2.15, the highest amount found being 7.25 per cent. No statement of guarantee is made of this ingredient. The average pound cost of nitrogen from blood has been 25.6 cents.

Calcium Cyanamid. Eight samples, representing three analyses, were inspected. The average total nitrogen has been 16.71 per cent; 15.92 per cent of this was found soluble and .79 per cent insoluble in water. The water insoluble portion was found highly available by the laboratory method (66.07 per cent active). The average ton price has been $68.18, making the pound cost of nitrogen 20.4 cents. Only one sample showed a low nitrogen test, No. 1263,—nitrogen found 15.34 per cent, guaranteed 16.00 per cent. All cyanamid sales were made on a unit price of nitrogen, subject to the experiment station test.

Castor Pomace. Ten samples were analyzed, representing two brands. The nitrogen guarantee was well maintained in all cases. The cash price per ton of this material has been $29.92. The average per cent of nitrogen found was 5.65 per cent, and the pound cost of nitrogen was 26.5 cents.

Cottonseed Meal. Eighty-four samples of cottonseed meal, representing as many carloads, have been inspected, the product being purchased in large quantities as a nitrogen source in fertilizers for tobacco. Cottonseed meal has cost on the average $36.62 per ton. The average per cent of nitrogen found has been 6.22, and the average pound cost of nitrogen has been 29.4 cents, not allowing for the value of the potash and phosphoric acid which the average meal will carry, which may be around $7.00 to $7.50 per ton at present prices. Much of the cottonseed meal this year has been sold on the so-called "basis price", which means that rebates will be allowed for nitrogen deficiencies, and over-runs are to be paid for on the same basis, a unit price for ammonia or nitrogen being named. It is felt that this is a fair way to conduct the trade for both shipper and purchaser, provided representative samples are always drawn and analyzed from each car upon arrival at its destination.

Thirty samples have shown commercial shortages. In calculating these commercial shortages, the value of the other two elements of plant food,—potash and phosphoric acid,—have not been taken into consideration, except in case of the Union Seed & Fertilizer Company's product. This company makes a guaranty of all three elements. The other companies who have registered cottonseed meal as fertilizer have simply guaranteed nitrogen.

The following brands show a commercial shortage:

F. W. Brode & Co., Owl Brand Cottonseed Meal, Nos. 23, 24, 42 and 1334, showed an average nitrogen test of 6.25%, 6.56% being guaranteed. Four other samlpes of this brand were found well up to the guarantee.

Buckeye Cotton Oil Co., Buckeye Prime Cottonseed Meal, Nos. 879 and 1319. Average nitrogen found 5.94%, guaranteed 6.18%. In six other samples the nitrogen guarantee was well maintained.

Humphreys-Godwin Co., Dixie Brand Cottonseed Meal, Nos. 3, 4, 5, 255, 349, and 1264. Average nitrogen found 5.67%, guaranteed 6.56%. Seven other samples did not show dificiencies.

Topsy Brand Cottonseed Meal, Nos. 432, 655 and 656. Average nitrogen found 5.46%, guaranteed 6.50%.

C. L. Montgomery & Co., Canary Brand Cottonseed Meal, No. 19. Nitrogen found 5.58%, guaranteed 6.18%. One other sample showed a nitrogen test above the minimum guarantee.

J. E. Soper & Co., Pilgrim Brand Cottonseed Meal, Nos. 2, 1329 and 1331. Nitrogen found 5.93%, guaranteed 6.16%. In one other sample of this brand the nitrogen was well maintained.

Pioneer Brand Cottonseed Meal, No. 1016. Nitrogen found 5.61%, guaranteed 6.50%. No. 1337, Nitrogen found 5.66%, guaranteed 5.76%.

Union Seed & Fertilizer Co., American Red Tag Cottonseed Meal, No. 40. Nitrogen found 5.79%, guaranteed 6.17%. Thirty-seven other carloads showed no commercial shortage.

Nitrate of Soda. Twenty-five samples have been examined, necessitating thirteen analyses. No deficiencies were found. The average nitrogen content of this product has been 15.64 per cent. The average cost of nitrate of soda has been $72.52, making the pound of nitrogen cost 23.15 cents.

Sulfate of Ammonia. Two samples have been analyzed, and no deficiencies found. The average nitrogen test found was 20.79 per cent. The average ton cost has been $92.50, making the pound of nitrogen cost 22.24 cents.

Potash Compounds. No potash salts or compounds were registered in Massachusetts during the season, and no samples were collected. The greater part of the potash supply of the country, which was not used in the chemical manufacturing industry, was apparently bought by the fertilizer manufacturers for their complete fertilizer mixtures, and about the only source of potash available, outside of the mixed fertilizers, was contained in wood ashes, of which a comparatively large tonnage was sold.

Wood Ashes. Thirty-eight carloads of wood ashes were analyzed, representing nine different brands. The average of these analyses shows moisture 20.91 per cent; phosphoric acid 1.35 per cent; calcium oxide 29.46 per cent; total or acid soluble potash 3.81 per cent; water soluble potash 2.84 per cent. The above average shows that about 74.5 per cent of the total potash was soluble in water, as against 77.75 per cent for the previous year. Several samples recently analyzed, but which do not appear in the tables of analysis in this bulletin, have shown a very low water soluble potash test, as compared to the acid soluble test. These samples have been studied to determine if they had received an addition of granite or feldspar, but no indications of such an admixture were apparent, and it is probable that the large amount of water insoluble potash is due to the high temperature at which the ashes were made, which would result in the fusion of a larger portion of the potash with silica compounds present. Wood ashes have cost on the average $14.80 per ton. Allowing a fair value for the lime and phosphoric acid present in the average ash of good quality, makes wood ashes, under the present conditions, the cheapest source of potash.

Phosphoric Acid Compounds. Acid phosphate has, to a greater extent than ever before, furnished the larger proportion of the available phosphoric acid used in agriculture. A small amount of precipitated phosphate, basic lime phosphate, and American slag have been offered, and representative samples of all of these compounds have been collected and analyzed.

Acid Phosphate. Thirty-nine samples of acid phosphate have been examined, necessitating twenty-one analyses. . No serious deficiencies were found. The average per cent of available phosphoric acid found was 16.32. Acid phosphate has cost, on the average, $20.94 per ton, making the pound of available phosphoric acid from this source cost 6.42 cents.

Basic Slag Phosphate. Only one brand of genuine basic slag phosphate was registered this season,—a domestic product manufactured by the Tennessee Coal, Iron & Railroad Co., of Birmingham, Ala. Two samples of this product were analyzed, showing an average of 17.75 per cent available phosphoric acid.

Basic Lime Phosphate. Three samples, representing three distinct brands, have been analyzed. Two of these showed a small shortage in available phosphoric acid, but over-runs in total. The average available phosphoric acid has been 12.97 per cent. The average ton cost has been $22.50, making the pound cost of available phosphoric acid 8.77 cents.

Mixed Complete Fertilizers. Following is a table giving a *summary of results* of analyses of complete fertilizers, as compared with guarantee:

MANUFACTURER	Number of brands.	Number equal to Guarantee in Commercial Value.	Number with All Three Elements Equal to Guarantee.	Number with One Element Below Guarantee.	Number with Two Elements Below Guarantee.	Number with Three Elements Below Guarantee.
Alphano Humus Co.	1	1	1	—	—	—
American Agric. Chemical Co.	63	63	50	12	1	—
Armour Fertilizer Works	8	6	3	3	2	—
Baugh & Sons Co.	3	3	1	2	—	—
Beach Soap Co.	4	4	—	4	—	—
Berkshire Fertilizer Co.	3	3	3	—	—	—
Bowker Fertilizer Co.	14	14	13	1	—	—
Carter's Tested Seeds, Inc.	4	4	3	—	1	—
E. D. Chittenden Co.	6	6	6	—	—	—
Clay & Sons	1	1	1	—	—	—
Coe-Mortimer Co.	8	8	7	1	—	—
Eastern Chemical Co.	1	1	—	1	—	—
Essex Fertilizer Co.	5	5	4	—	1	—
R. & J. Farquhar & Co.	1	—	—	—	—	1
C. W. Hastings	1	1	—	1	—	—
International Agric. Corp.	6	6	4	1	1	—
Listers Agric. Chem. Works	9	9	4	4	1	—
Mapes Formula & Peru. Guano Co.	8	8	7	1	—	—
Mitchell Fertilizer Co.	1	1	1	—	—	—
National Fertilizer Co.	10	10	10	—	—	—
Natural Guano Co.	1	1	1	—	—	—
New England Fertilizer Co.	3	3	3	—	—	—
Nitrate Agencies Co.	2	2	—	2	—	—
Olds & Whipple	3	3	3	—	—	—
Parmenter & Polsey Fert. Co.	2	2	—	2	—	—
R. T. Prentiss	2	2	1	1	—	—
Pulverized Manure Co.	3	3	3	—	—	—
Rogers & Hubbard Co.	4	4	4	—	—	—
Ross Bros. Co.	6	6	5	1	—	—
F. S. Royster Guano Co.	10	8	5	2	3	—
Sanderson Fert. & Chem. Co.	7	7	7	—	—	—
Springfield Rendering Co.	1	1	—	1	—	—
Wm. Thomson & Sons Ltd.	3	3	3	—	—	—
Virginia-Carolina Chem. Co.	9	9	7	2	—	—
Whitman & Pratt Rendering Co.	3	3	1	2	—	—
Wilcox Fertilizer Co.	5	5	5	—	—	—
A. H. Wood & Co.	1	1	—	1	—	—

The summaries of analyses of complete fertilizers show that out of a total of 226 brands analyzed, 57 (25 per cent of the total number) fell below the minimum guarantee in one or more elements. This is a much better showing than during the preceding year. The deficiencies this season were as follows:

Brands deficient in one element	46,
Brands deficient in two elements	10,
Brands deficient in three elements	1.

Only 5 brands, (2.2 per cent of the whole number) showed a commercial shortage.

The deficiencies in the several ingredients were as follows:

Brands deficient in nitrogen	21,
Brands deficient in available phosphoric acid	17,
Brands deficient in potash	31.

Less deficiencies were found in all three elements than for the previous year.

The following table shows the commercial shortages of 25 cents and over per ton in mixed complete fertilizers, as compared with 1915.

Commercial Shortages.	Number of Brands. 1915	Number of Brands. 1916
More than $2.00 per ton,	2	1
Between $1.00 and $2.00 per ton,	4	2
Under $1.00, not less than 25 cts. per ton,	19	2

The following brands have shown a commercial shortage of 50 cents or over per ton, shortages being reduced in all cases by values of over-runs in other ingredients.

Armour Fertilizer Works, Armour's Grain Grower, No. 1077. Nitrogen found 1.56%, guaranteed 1.65%; available phosphoric acid found 8.22%, guaranteed 8.00%; potash found 1.78%, guaranteed 2.00%.

Armour's 4-8-2 Fertilizer, No. 1076. Nitrogen found 3.26%, guaranteed 3.29%; available phosphoric acid found 8.02%, guaranteed 8.00%; potash found 1.82%, guaranteed 2.00%.

R. & J. Farquhar & Co., Farquhar's Pulverized Sheep Manure, No. 420. Nitrogen found .87%, guaranteed 1.25%; phosphoric acid found .87%, guaranteed .90%; potash found 1.03%, guaranteed 2.00%.

Ross Bros. Co., Worcester Special Lawn Dressing 1915, No. 1002. Nitrogen found 3.05%, guaranteed 2.88%; available phosphoric acid found 8.01%, guaranteed 8.00%; potash found 3.68%, guaranteed 4.00%. Another sample of this brand, No. 852, did not show a commercial shortage.

F. S. Royster Guano Co., Royster's Arrow Head Tobacco Fertilizer, No. 738. Nitrogen found 3.63%, guaranteed 4.11%; available phosphoric acid found 4.86%, guaranteed 4.00%; potash found 1.82%, guaranteed 2.00%.

Royster's Pipe of Peace Tobacco Fertilizer, No. 1197. Nitrogen found 3.78%, guaranteed 4.11%; available phosphoric acid found 3.72%, guaranteed 3.00%; potash found .95%, guaranteed 1.00%.

Ammoniated Superphosphates.

These materials, as the name would indicate, are mixed fertilizers furnishing nitrogen and phosphoric acid. One hundred and twenty-seven brands were registered and sold in the State. The following table gives a *summary of results* of analyses of these products as compared with the guarantee.

Summary of results of analysis of ammoniated superphosphates:

MANUFACTURER	Number of Brands.	Number Equal to Guarantee in Commercial Value.	Number with Both Elements Equal to Guarantee.	Number with One Element Below Guarantee.	Number with Two Elements Below Guarantee.
W. H. Abbott	2	2	1	1	—
American Agric. Chem. Co.	6	6	5	1	—
Armour Fertilizer Works	2	2	2	—	—
Baugh & Sons Co.	2	2	2	—	—
Beach Soap Co.	1	1	1	—	—
Berkshire Fertilizer Co.	7	7	6	1	—
Bowker Fertilizer Co.	5	5	5	—	—
E. D. Chittenden Co.	3	3	2	1	—
Coe-Mortimer Co.	6	6	6	—	—
Essex Fertilizer Co.	8	8	6	2	—
John Glennie	1	1	1	—	—
Thos. Hersom & Co.	1	1	1	—	—
International Agric. Corp.	6	5	4	2	—
Listers Agric. Chem. Works	4	4	2	2	—
Lowell Fertilizer Co.	10	10	7	3	—
Mapes Formula & Peruvian Guano Co.	1	1	1	—	—
National Fertilizer Co.	5	4	3	1	1
New England Fertilizer Co.	7	6	5	2	—
Olds & Whipple	3	3	1	2	—
Parmenter & Polsey Fert. Co.	5	4	2	2	1
Reading Bone Fertilizer Co.	4	4	3	1	—
Rogers & Hubbard Co.	12	12	7	5	—
F. S Royster Guano Co.	5	5	3	2	—
J. W. Sanborn	2	2	1	1	—
Sanderson Fertilizer & Chem. Co.	5	5	5	—	—
M. L. Shoemaker & Co., Ltd.	1	1	1	—	—
Springfield Rendering Co.	3	3	3	—	—
20th Century Specialty Co.	1	1	1	—	—
Whitman & Pratt Rendering Co.	3	3	2	1	—
Wilcox Fertilizer Co.	4	4	1	3	—
Worcester Rendering Co.	2	2	2	—	—

Summaries show that out of 127 brands of ammoniated superphosphates analyzed, 35 (37.6 percent of the total number) fell below the minimum guarantee in one or more elements. Thirty-three brands were found deficient in one element, and 2 in both elements of plant food. Eleven brands were found deficient in nitrogen, and 26 in phosphoric acid. Four brands showed a commercial shortage, two falling between $1.00 and $2.00 per ton and two under $1.00, but not less than 50 cents.

Following are the brands which have shown the commercial shortages:

International Agricultural Corporation, Buffalo Top Dresser, Nos. 396-707-783-978. Nitrogen found 5.28%, guaranteed 5.80%; available phosphoric acid found 6.97%, guaranteed 6.00%.

Another analysis of this brand, No. 1117, showed both elements well above the guarantee.

National Fertilizer Co., Nitrogen Phosphate Mixture No. 3, No. 909. Nitrogen found 2.26%, guaranteed 2.47%; available phosphoric acid found 9.48%, guaranteed 10.00%.

New England Fertilizer Co., New England High Grade Potato Fertilizer 4-10, Nos. 481-609. Nitrogen found 3.07%, guaranteed 3.28%; available phosphoric acid found 10.07%, guaranteed 10.00%.

Parmenter & Polsey Fertilizer Co., P. &. P. Plymouth Rock 3½-10, Nos. 899-1219. Nitrogen found 2.80%, guaranteed 2.88%; available phosphoric acid found 9.26%, guaranteed 10.00%.

Quality of Plant Food in Complete Fertilizers.

A study of the *quality of nitrogen* used in these formulas for 1916, shows that the average total nitrogen was 3.52%; nitrates and ammoniates 1.82%; organic nitrogen 1.70%. In other words, 51.7% of the total nitrogen was present in form of nitrates and ammoniates, and 48.3% as organic, showing the use of a considerably higher proportion of mineral nitrogen than for 1915.

The quality of the organic nitrogen used is indicated by the following average: water soluble organic .46%; water insoluble organic 1.24%, of which .67% was found active and .57% inactive by laboratory methods. The percentage activity of the total nitrogen in the complete fertilizers was 83.80; of the total organic nitrogen 66.47, and of the water insoluble organic nitrogen 54.03.

The following table has been prepared to show the average amount found, and the quality of nitrogen used by each manufacturer in the brands of complete fertilizers sold in Massachusetts during 1916.

MANUFACTURER	Number of Brands.	Total Nitrogen.	Percentage Activity of Total Nitrogen.	Nitrates and Ammoniates.	Total Organic Nitrogen.	Percentage Activity of Total Organic Nitrogen.	Percentage Activity of Water Insoluble Organic Nitrogen.
Alphano Humus Co.	1	1.73	49.13	.24	1.49	40.94	40.94
Amer. Agric. Chem. Co.	63	3.15	88.25	1.85	1.30	71.54	56.98
Armour Fert. Works	8	2.37	75.95	.84	1.53	62.75	54.03
Baugh & Sons Co.	3	2.57	85.21	1.33	1.24	69.35	44.93
Beach Soap Co.	4	4.63	87.47	2.15	2.48	76.61	53.60
Berkshire Fertilizer Co.	3	3.83	75.20	1.11	2.72	65.08	51.53
Bowker Fertilizer Co.	14	3.16	88.00	1.89	1.27	70.08	59.58
Jos. Breck & Sons Corp.	4	3.09	77.02	1.77	1.38	48.55	46.21
Carter's Tested Seeds, Inc.	4	4.47	87.25	2.85	1.62	64.81	43.00
E. D. Chittenden Co.	6	3.72	83.06	1.96	1.76	64.20	51.54
Clay & Sons	1	5.60	80.35	2.24	3.36	67.26	61.54
Coe-Mortimer Co.	8	4.63	90.71	3.05	1.58	72.79	60.91
Essex Fertilizer Co.	5	3.62	82.87	1.21	2.41	74.27	53.03
R. & J. Farquhar & Co.	1	.87	36.78	.05	.82	32.92	30.38
International Agric. Corp.	6	3.25	76.61	1.29	1.96	61.22	53.66
Listers Agric. Chem. Works	9	3.01	87.71	1.75	1.26	70.63	57.47
Mapes Form. & Peru. Guano Co.	8	5.98	89.13	4.35	1.63	60.12	51.85
Mitchell Fertilizer Co.	1	3.65	83.83	1.48	2.17	72.81	53.90
National Fertilizer Co.	10	3.76	85.90	2.24	1.52	65.13	55.09
Natural Guano Co.	1	2.45	49.39	.29	2.16	42.59	30.73
New England Fert. Co.	3	3.65	80.82	1.16	2.49	71.89	54.25
Nitrate Agencies Co.	2	11.45	77.21	3.80	7.65	65.88	43.75
Olds & Whipple	3	3.60	80.56	1.33	2.27	69.16	58.34
Parmenter & Polsey Fert. Co.	2	3.87	79.84	1.06	2.81	72.24	55.43
R. T. Prentiss	2	3.19	79.00	.99	2.20	69.54	63.39
Pulverized Manure Co.	3	1.90	42.11	.16	1.74	36.78	25.68
Rogers & Hubbard Co.	4	4.78	76.36	1.57	3.21	64.80	55.69
Ross Bros. Co.	6	3.17	78.86	1.16	2.01	66.67	55.04
F. S. Royster Guano Co.	10	3.01	80.06	1.32	1.69	64.50	53.49
Sanderson Fert. & Chem. Co.	7	3.17	73.82	.68	2.49	66.67	56.55
Springfield Rendering Co.	1	3.45	87.25	1.37	2.08	78.84	56.86
Wm. Thomson & Sons Ltd.	3	4.52	88.50	2.95	1.57	66.88	59.37
Virginia-Carolina Chem. Co.	9	3.15	87.62	1.88	1.27	66.29	57.14
Whitman & Pratt Rend. Co.	3	3.34	89.22	1.50	1.84	80.44	62.88
Wilcox Fertilizer Co.	5	3.77	71.63	.96	2.81	61.92	55.78
A. H. Wood & Co.	1	3.99	57.64	.37	3.62	53.32	43.48

Quality of Plant Food in Ammoniated Superphosphates. The following table gives a summary of each manufacturer's brands, as related to quantity and quality of nitrogen used in the ammoniated superphosphates.

MANUFACTURER	Number of Brands.	Total Nitrogen.	Percentage Activity of Total Nitrogen.	Nitrates and Ammoniates.	Total Organic Nitrogen.	Percentage Activity of Total Organic Nitrogen.	Percentage Activity of Water Insoluble Organic Nitrogen.
W. H. Abbott	2	4.78	71.76	.95	3.83	64.75	56.60
American Agric. Chem. Co.	6	3.53	89.52	2.13	1.40	73.57	57.95
Armour Fert. Works	2	3.90	84.36	1.96	1.94	68.56	61.14
Baugh & Sons Co	2	2.87	78.75	.86	2.01	69.65	51.59
Beach Soap Co	1	2.52	79.36	.28	2.24	76.79	51.40
Berkshire Fertilizer Co	7	4.05	79.51	1.20	2.85	70.88	57.87
Bowker Fertilizer Co	5	2.88	85.07	1.37	1.51	71.52	59.81
E. D. Chittenden Co	3	4.07	89.43	2.48	1.59	72.96	53.26
Coe-Mortimer Co	6	3.39	82.60	1.63	1.76	66.48	53.18
Essex Fertilizer Co.	8	3.57	84.32	1.32	2.25	75.11	57.26
John Glennie	1	4.22	74.40	.42	3.80	71.58	44.61
Thos. Hersom & Co	1	5.91	83.59	3.31	2.60	62.70	53.59
International Agric. Corp.	6	2.95	83.73	1.47	1.48	67.57	57.52
Listers Agric. Chem. Works	4	2.42	83.88	1.28	1.14	65.79	53.01
Lowell Fertilizer Co	10	3.24	83.34	1.19	2.05	73.66	55.37
Mapes Form. & Peru. Guano Co	1	3.20	86.56	2.23	.97	55.67	36.77
National Fertilizer Co	5	3.64	84.34	1.93	1.71	66.67	52.69
New England Fert. Co.	7	2.97	81.82	.89	2.08	74.04	56.10
Olds & Whipple	3	6.19	80.30	1.95	4.24	71.22	68.07
Parmenter & Polsey Fert. Co.	5	2.52	85.32	.93	1.59	76.74	57.47
Reading Bone Fert. Co.	4	2.10	90.95	1.13	.97	80.41	65.46
Rogers & Hubbard Co	12	3.70	90.54	2.23	1.47	76.20	58.82
F. S. Royster Guano Co	5	3.47	78.96	1.39	2.08	64.90	57.31
J. W. Sanborn	2	4.08	76.96	.55	3.53	73.37	62.99
Sanderson Fert. & Chem. Co.	5	3.94	85.54	2.02	1.92	70.31	54.76
M. L. Shoemaker & Co., Ltd.	1	4.10	86.10	1.03	3.07	81.44	62.00
Springfield Rendering Co	3	3.95	88.86	1.81	2.14	79.44	62.39
Whitman & Pratt Rend. Co.	3	2.99	88.30	1.13	1.86	81.28	66.02
Wilcox Fertilizer Co	4	2.85	77.54	.89	1.96	67.35	60.25
Worcester Rendering Co	2	3.35	85.37	1.31	2.04	75.98	47.88

The quality of the nitrogen used in the ammoniated superphosphates is shown by the following data: average total nitrogen found 3.58%; nitrogen in form of nitrates and ammoniates 1.44%; organic nitrogen 2.14%. Expressed in another way, 40.2% of the total nitrogen was present in mineral forms and 59.8% in organic forms. In regard to the quality of the organic nitrogen used, it was found that .71% was water soluble and 1.43% water insoluble. Of the latter .82% was found active and .61% inactive by laboratory methods. The percentage activity of the total nitrogen was 83%; of the total organic 72%, and of the water insoluble organic 57%. The brands containing inferior forms of nitrogen will be found on a following page.

Brands Showing Inferior Forms of Nitrogen. Sixteen out of a total of 226 brands of complete fertilizers, and 2 out of a total of 127 brands of ammoniated superphosphates, besides 1 sample of a sewerage product, 1 sample composed largely of soot, and 2 samples of partially dried peat or "humus", were found to contain organic nitrogen of questionable quality, and are so listed in the tables of analysis. The quality of the water insoluble nitrogen in these brands has been studied by both the alkaline and the neutral permanganate methods, and the table which follows gives in detail the results obtained. It should be borne in mind, in interpreting the results, that in case of the alkaline method, anything falling below 50, and in the neutral method anything falling below 85, should be classed as inferior. The originator of the neutral method (Mr. Street) states that he would view with suspicion anything falling appreciably below 90.

A number of pulverized manures have been included in the table. It is a well known fact that the water insoluble portion of the nitrogen in this class of materials is slow in action. This does not mean that this nitrogen is without distinct fertilizing value. It does mean, however, that relatively speaking, it is less valuable than the better grades of organic nitrogen usually employed in commercial fertilizers. They were included, however, for comparison; also because they are registered products and appear in the tables of analyses.

Brands of fertilizer showing inferior forms of organic nitrogen:

NAME OF BRAND	Total Nitrogen		Nitrogen as Nitrates and Ammoniates.	Water Soluble Organic Nitrogen.	Water Insoluble Organic Nitrogen.	Activity of Water Ins. Nit. Method	
	Found.	Guaranteed.				Alk'line Permanganate	Neutral Permanganate
Complete Fertilizers.							
Prepared Alphano Humus	1.73	1.25	.24	None	1.49	41.	51.
Armour's Grain Grower	1.56	1.65	.77	.09	.70	47.	86.
Armour's Wheat, Corn and Oats Spcl.	.94	.82	.21	.16	.57	43.	75.
Baugh's Comp. Animal Base Fert.	2.01	1.65	.66	.51	.84	48.	72.
Baugh's Grand Rapid High Grade Guano	2.22	2.47	.88	.73	.61	40.	69.
Baugh's High Grade Potato Grower	3.47	3.29	2.44	.42	.61	45.	66.
Beach's Lawn Dressing	4.25	4.00	2.69	.87	.69	37.	84.
Breck's Pulverized Sheep Manure	2.21	2.50	.16	.30	1.75	25.	62.
Carter's Worm Eradicating Fertilizer	2.36	2.51	.11	.19	2.06	28.	67.
Farquhar's Pulverized Sheep Manure	.87	1.25	.05	.03	.79	31.	67.
Mapes' Corn Manure	2.71	2.47	1.71	.02	.98	42.	83.
Natural Guano Co.'s Pulverized Sheep Manure	2.41	2.25	.26	.38	1.77	31.	65.
Natural Guano Co.'s Pulverized Sheep Manure	2.49	2.25	.32	.36	1.81	31.	80.
Wizard Brand Pulv. Cattle Manure	1.86	1.80	.13	.18	1.55	27.	56.
Wizard Brand Pulv. Sheep Manure	2.04	1.80	.19	.28	1.57	26.	69.
Wizard Brand Pulverized Manure	1.80	1.80	.15	.33	1.32	22.	61.
Royster's Logical Compound	1.91	1.65	.53	.62	.76	38.	81.
Ammoniated Superphosphates, Sewerage and Nitrogen Products.							
Berkshire Economical Grass Fert.	7.98	8.00	5.68	1.98	.32	44.	69.
Lowell Sterling Phos.	1.10	.82	.33	.39	.38	46.	82.
Tavender's Am-Pho-Nite	.83	.25	.06	.06	.71	45.	82.
Blood's Electric Cut Worm Exterm.	1.66	1.50	.64	.07	.95	13.	45.
Alphano Humus "Raw" Sun-Cured	1 54	1.28	.15	.04	1.34	35.	54.
Boston Humus Co.'s Natural Humus	1.85	1.00	.13	.03	1.69	32.	55.

Special Study of the Availability of Organic Nitrogen. A further study was made of the availability of the organic nitrogen, by separating the organic from the inorganic portion of the several samples, by means of carbon tetrachloride, and testing the former by the alkaline permanganate method. (See Jour. of Ind. and Eng. Chem., Vol. 6, No. 7, page 508.) The results are given in the following table, and furnish additional proof of the low availability of the organic nitrogen.

1,40

NAME OF BRAND	Percentage of Total Nitrogen in the Organic Portion	Percentage of Water Insoluble Nitrogen in the Organic Portion.	Percentage Activity of Insoluble Nitrogen by the Alkaline Permanganate Method.
Complete Fertilizers.			
Prepared Alphano Humus	3.06	2.82	34.
Armour's Grain Grower	4.44	2.99	33.
Armour's Wheat, Corn & Oats Special	6.78	5.48	49.
Baugh's Complete Animal Base Fert.	8.74	7.02	52.
Baugh's Grand Rapid High Grade Guano	3.58	2.36	31.
Baugh's H. G. Potato Grower	6.08	2.77	32.
Beach's Lawn Dressing	4.65	1.98	52.
Breck's Pulverized Sheep Manure	2.54	2.11	23.
Carter's Worm Eradicating Fertilizer.	2.68	2.36	27.
Farquhar's Pulv. Sheep Manure	2.13	2.02	25.
Mapes' Corn Manure	4.92	3.88	41.
Natural Guano Co's Pulv. Sheep Manure	2.41	1.98	26.
Natural Guano Co.s' Pulv. Sheep Manure	2.40	1.91	30.
Wizard Brand Pulv. Cattle Manure	1.99	1.81	22.
Wizard Brand Pulv. Sheep Manure	1.99	1.87	24.
Wizard Brand Pulv. Manure	2.20	1.91	25.
Royster's Logical Compound	6.29	3.38	39.
Ammoniated Superphosphates, Sewerage and Nitrogen Products			
Berkshire Economical Grass Fert.	12.31	5.27	30.
Lowell Sterling Phosphate	2.88	1.82	45.
Tavender's Am-Pho-Nite	3.42	3.04	48.
Blood's Electric Cut Worm Exterm.	1.45	1.23	13.
Alphano Humus "Raw" Sun-Cured	2.78	2.53	33.
Boston Humus Co.'s Natural Humus.	2.63	2.47	29.

In addition to the brands listed in the above table, a number of others were found to contain inferior forms of insoluble nitrogen. The brands were not condemned, however, as the amount of active or available nitrogen present exceeded the minimum amount guaranteed.

Phosphoric Acid in Complete Fertilizers. Eighty-six and three-tenths per cent of the total phosphoric acid found in all the complete fertilizers was present in available form, and 50.4 per cent of the available phosphoric acid was present in water soluble form. This shows a satisfactory availability, and indicates the use of high grade sources of phosphoric acid in the mixed complete fertilizers.

Phosphoric Acid in Ammoniated Superphosphates. Eighty-five per cent of the total phosphoric acid found in all the ammoniated superphosphates was present in available form, and 52 per cent of the available phosphoric acid was present in water soluble form. In other words, the forms were but little different from those found in mixed complete goods.

Potash. The average complete fertilizer showed the presence of 1.34 per cent of water soluble potash. Most of the brands were guaranteed only 1 per cent, although some tobacco brands were guaranteed 2 per cent. In all probability most of the potash used was in form of sulfate, or from grades of domestic potash salt containing both muriate and sulfate. Very little German potash salt has been imported during the year. Potash has been offered to the trade from several sources, among them being kelp potash, potash from evaporation of water of saline lakes in the west, sulfate of potash from Alunite, and a potash salt from Japan containing both sulfate and muriate.

Out of a total of 226 brands, 70 (31 per cent) had the major portion of their potash in form of sulfate. In the other brands a sufficient amount of chlorine was present to satisfy all of the potash. This does not necessarily mean that the source of potash was muriate, as this salt has been valued from $100 to $150 per ton more than the sulfate, on account of its great demand in the chemical industry. It is probable that in cases where considerable amounts of chlorine were present, grades of potash were used that had both sulfates and chlorides, which would lessen their value for other industrial purposes.

Twenty-six brands of tobacco fertilizer have been examined. The average total water soluble potash found was 1.38 per cent, of which .94 per cent was from sulfate and .44 per cent from muriate. The potash in mixed goods has cost the consumer, during the past season, $5.00 per unit, or 25 cents per pound. In the tables of analyses wherever potash has been found present as sulfate, an asterisk has been used in the "found" potash column, and foot notes designate the proportion of each form present.

Lime Compounds. The annual inspection has necessitated the examination of 53 lime products. Forty-one analyses, representing 35 different brands, have been made.

They are grouped in the tables as follows:

Burned or caustic lime,	2	analyses, representing	2	brands,
Hydrated or slaked lime,	13	" "	12	"
Precipitated lime,	2	" "	1	"
Lime ashes,	7	" "	6	"
Ground limestone,	12	" "	10	"
Marl,	2	" "	1	"
Gypsum or land plaster,	3	" "	3	"

The same form as in the past has been adhered to in the publication of results. On the left hand page will be found the percentages of the various constituents, as determined by analysis. On the right hand page, will be found the probable combinations as existing in each sample. These figures are computed from the analytical data.

The following summary table gives the highest, lowest and average cost of 100 pounds of calcium oxide from the various sources, so far as cost data is available.

SOURCES	Cost of 100 pounds of Calcium and Magnesium Oxides.		
	Highest	Lowest	Average
Hydrated or slaked lime,	$1.24	24 cts.	58 cts.
Precipitated lime,	—	—	41 "
Lime ashes,	—	—	75 "
Ground limestone and marl,	1.49	36 "	72 "

An important point in connection with the purchase of ground limestone, which frequently is given too little attention, is its mechanical condition. Dr. Hartwell of the Rhode Island Experiment Station has shown that the activity of this class of lime products depends upon the degree of fineness, and that when ground to pass a 100 mesh sieve, it compared favorably in action, during a season, with the hydrated or slaked limes. (See Rhode Island Extension Service Circular No. 6, Vol. 1, November, 1914.) The mechanical analyses of each brand of ground limestone inspected will be found in the tables.

It may not be out of place at this time to submit a compilation of results which show the average lime requirements of soils tested at this laboratory during the past three years. These analyses have been made for individual farmers in various localities in the several counties, and the soil samples, with very few exceptions, were taken according to directions furnished by the experiment station. Many wide variations were noted in the lime requirement of soils from the same farm. The figures given in the summary may not, therefore, be a reliable indication as to the probable amount of lime necessary to use in all cases, in that particular county. It serves, however, to show the almost universal need of the occasional use of lime in our system of agriculture.

Lime requirements of Massachusetts soils, expressed in pounds per acre, of actual lime (CaO) necessary to produce a neutral soil, one foot deep.

COUNTY	Number of Tests Made	Average Lime Requirement Expressed in Pounds of Calcium Oxide (CaO)
Berkshire,	29	4,327
Franklin,	49	4,695
Hampshire,	137	4,384
Hampden,	64	5,379
Worcester,	62	8,443
Middlesex,	79	7,258
Essex,	46	10,237
Suffolk,	66	7,031
Norfolk,	31	6,359
Bristol,	26	7,245
Plymouth,	45	10,714
Barnstable,	23	4,895

It should be understood that for most crops it is not necessary that the soil be made wholly neutral. Practical experience has shown that even in the case of crops needing most lime, small applications at frequent intervals are better than large applications at long intervals.

Explanation of Tables of Analyses.

In the tables of analyses which follow, the mixed fertilizers have been grouped into two sections,—those having three elements guaranteed, (nitrogen, phosphoric acid and potash) so-called complete fertilizers, and the so-called ammoniated superphosphates, which furnish nitrogen and phosphoric acid. Many of these latter mixtures are in general make-up similar to brands listed under complete fertilizers, excepting that the potash is entirely omitted because of short supply and high cost.

The results of a study of the different forms of nitrogen have been presented somewhat differently than in the past, the object being greater simplicity and ease of interpretation, and also to conform to a uniform system adopted by the New England States, New York and New Jersey.

The percentages of nitrogen in form of nitrates and ammoniates, as well as the water soluble organic nitrogen and the total nitrogen, are given as in former publications. In place of publishing the actual percentages of active water insoluble and inactive water insoluble organic nitrogen, a column is introduced which gives the total water insoluble organic nitrogen, also a column adjoining, which gives an idea of the quality of this form of nitrogen by the use of the words "*passed*" and "*inferior*". Any brand that is marked "*passed*" carries its water insoluble nitrogen in a satisfactory form. In other words, it shows an activity by laboratory methods that would class it above the so-called low grade organic ammoniates. On the other hand, any brand marked "*inferior*" has shown by the laboratory test a low activity, and would indicate the use of inferior forms of organic ammoniates. All of the brands with the nitrogen marked "*inferior*" have been grouped in a separate table, and the actual percentages of active and inactive water insoluble nitrogen are given. (See pages 27 and 28.)

In place of the usual column giving comparative valuations, there has been substituted a column headed "Guarantee Substantially Met (?)." In those brands which do not show a commercial shortage,—that is, where the guarantee is substantially met,—the word "Yes" has been used. In those brands where a commercial shortage exists, the word "No" will appear. This simple arrangement will enable the reader at a glance to detect those brands which show serious deficiencies.

The arrangement of the remainder of the table, which includes the different forms of phosphoric acid and potash, is the same as in preceding years, and is self-explanatory.

DETAILED
TABLES
OF
ANALYSES

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Alphano Humus Co., Whitehall Bl'd'g., New York City.				
Prepared Alphano Humus	Amherst	Yes	1275	17.36
American Agric. Chem. Co., 92 State St., Boston, Mass.				
Bradley's Corn Phosphate, 1916	Boston	Yes	377	10.46
" " " "	Boston		426	
" " " "	Beverly		506	
" " " "	Marblehead		524	
Bradley's Corn Phosphate, 1916	Millis	Yes	553	11.20
" " " "	Chelmsford		555	
" " " "	Newton Lr. Falls		691	
Bradley's Comp. Manure for Corn and Grain 1916	Boston	Yes	378	10.23
" " " " " " " "	Boston		418	
Bradley's Comp. Manure for Pot. and Veg., 1916	Boston	Yes	383	10.84
" " " " " " " "	Boston		423	
" " " " " " " "	Norwood		451	
Bradley's Comp. Manure for Pot and Veg., 1916	Amesbury	Yes	483	10.19
" " " " " " " "	Millis		554	
" " " " " " " "	Lowell		587	
Bradleys Comp. Man. for Top Dress. Grass & Grain, 1916	Boston	Yes	388	9.39
" " " " " " " " "	Boston		419	
" " " " " " " " "	Amesbury		482	
" " " " " " " " "	Beverly		508	
" " " " " " " " "	Newton Lr. Falls		683	
Bradley's Eclipse Phosphate, 1916	New Bedford	Yes	187	10.56
" " " "	Boston		380	
" " " "	Boston		427	
" " " "	Amesbury		466	
" " " "	Millis		552	
Bradley's English Lawn Fertilizer, 1916	Amesbury	Yes	458	9.90
" " " " "	Lowell		581	
Bradley's Potato Fertilizer, 1916	Marblehead	Yes	525	10.90
" " " "	Millis		558	
" " " "	Chelmsford		561	
Bradley's Potato Fertilizer, 1916	Lowell	Yes	586	10.64
" " " "	Framingham		677	
" " " "	Fitchburg		950	
Bradley's Potato Manure, 1916	New Bedford	Yes	186	10.46
" " " "	Boston		403	
" " " "	Amesbury		464	
" " " "	Millis		549	
" " " "	Lowell		582	
Bradley's Special Niagara Phosphate	Marblehead	Yes	523	10.02
" " " "	Newton Lr. Falls		690	
" " " "	Plymouth		758	
" " " "	Plymouth		761	
Bradley's X. L. Superphosphate of Lime, 1916	New Bedford	Yes	188	9.25
" " " " " "	Boston		389	
" " " " " "	Boston		416	
" " " " " "	Amesbury		465	
Bradley's X. L. Superphosphate of Lime, 1916	Beverly	Yes.	505	10.46
" " " " " "	Chelmsford		522	
" " " " " "	Millis		559	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Total Found	Total Guaranteed	Water Soluble	Reverted	Insoluble	Total Found	Total Guaranteed	Available Found	Available Guaranteed	Found	Guaranteed
.24	—	1.49	Inferior	1.73	1.25	.19	1.55	1.47	3.21	.50	1.74	—	.49	.50
1.31	.18	.63	Passed	2.12	1.65	4.34	5.17	1.61	11.12	11.00	9.51	10.00	1.03	1.00
1.12	.19	.59	Passed	1.90	1.65	4.85	5.50	1.51	11.86	11.00	10.35	10.00	.95	1.00
2.33	.44	1.03	Passed	3.80	3.29	4.78	4.51	1.68	10.97	10.00	9.29	9.00	1.00	1.00
2.21	.41	1.18	Passed	3.80	3.29	4.08	4.98	1.66	10.72	10.00	9.06	9.00	1.00	1.00
2.14	.36	1.09	Passed	3.59	3.29	4.12	4.96	1.84	10.92	10.00	9.08	9.00	1.01	1.00
2.70	.50	1.17	Passed	4.37	4.11	3.25	4.81	2.04	10.10	9.00	8.06	8.00	1.14	1.00
.97	.21	.56	Passed	1.74	1.23	4.85	5.86	1.28	11.99	11.00	10.71	10.00	1.03	1.00
2.94	.26	1.17	Passed	4.37	4.11	4.02	4.47	2.02	10.51	9.00	8.49	8.00	1.18	1.00
1.52	.33	.65	Passed	2.50	2.06	3.64	5.01	1.17	9.82	9.00	8.65	8.00	1.00	1.00
1.30	.39	.77	Passed	2.46	2.06	3.74	4.42	1.79	9.95	9.00	8.16	8.00	1.66	1.00
1.63	.26	.84	Passed	2.73	2.47	3.67	5.79	1.48	10.94	10.00	9.46	9.00	1.10	1.00
.57	.06	.43	Passed	1.06	.82	3.55	4.97	1.05	9.57	9.00	8.52	8.00	1.01	1.00
1.77	.40	1.03	Passed	3.20	2.47	4.17	4.78	1.71	10.66	10.00	8.95	9.00	.93	1.00
1.70	.35	.79	Passed	2.84	2.47	4.57	4.43	1.56	10.56	10.00	9.00	9.00	1.03	1.00

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
American Agric. Chem. Co.—(*Continued.*)				
Churchs' Fish and Potash, 1916	New Bedford	Yes	175	10.98
“ “ “ “ “	Taunton		238	
“ “ “ “ “	N. Westport		306	
Clark's Cove Bay State Fertilizer, 1916	Adams	Yes	1158	11.17
Clark's Cove Bay State Fertilizer G G, 1916	Monson	Yes	1234	10.37
Clark's Cove Great Planet Manure, 1916	Spencer	Yes	1033	10.61
Clark's Cove Potato Fertilizer, 1916	Monson	Yes	1237	9.96
Clark's Cove Potato Manure, 1916	Spencer	Yes	999	12.15
Darling's Animal Fertilizer, 1916	N. Amherst	Yes	106	10.60
“ “ “ “	Worcester		954	
“ “ “ “	Webster		1035	
Darling's Farm Favorite, 1916	Taunton	Yes	237	10.20
“ “ “ “	Webster		1018	
“ “ “ “	Marlboro		1066	
Darling's Blood, Bone and Potash, 1916	Hillside	Yes	799	10.42
“ “ “ “ “ “	Pepperell		818	
“ “ “ “ “ “	Worcester		955	
Darling's General Fartilizer, 1916	Pepperell	Yes	817	9.90
Darling's Potato Manure, 1916	N. Amherst	Yes	105	10.00
“ “ “ “	Taunton		220	
“ “ “ “	Marlboro		1065	
Farquhar's Lawn and Garden Dressing, 1916	Boston	Yes	415	9.81
Farquhar's Vegetable and Potato Fertilizer, 1916	Boston	Yes	421	10.17
Great Eastern Garden Special, 1916	Chelmsford	Yes	562	10.88
“ “ “ “ “	Braintree		719	
“ “ “ “ “	Pepperell		866	
Great Eastern General, 1916	S. Braintree	Yes	720	10.52
Great Eastern Northern Corn Special, 1916	Chelmsford	Yes	557	9.99
Great Eastern Potato Manure, 1916	Chelmsford	Yes	556	11.04
“ “ “ “ “	S. Braintree		721	
Pacific High Grade General Fertilizer, 1916	S. Hadley	Yes	1123	10.38
Soluble Pacific Guano, 1916	S. Hadley	Yes	1122	11.30
Pacific Potato Special, 1916	Newburyport	Yes	463	10.25
Packer's Union Animal Fertilizer, 1916	Amherst	Yes	667	11.26
“ “ “ “ “	N. Sudbury		849	
“ “ “ “ “	Greenfield		894	
“ “ “ “ “	N Wilbraham		1199	
Packer's Union Potato Manure, 1916	Amherst	Yes	668	11.55
“ “ “ “ “	N. Sudbury		848	
“ “ “ “ “	Greenfield		893	
Packer's Union Universal Fertilizer, 1916	N Sudbury	Yes	847	9.55
“ “ “ “ “	Greenfield		895	
Quinnipiac Corn Manure	Southwick	Yes	787	10.64
Quinnipiac Market Garden Manure	Fall River	Yes	156	11.82
Quinnipiac Phosphate, 1916	Billerica	Yes	611	8.67
Quinnipiac Potato Manure, 1916	Fall River	Yes	153	11.12
Quinnipiac Potato Manure, 1916	Billerica	Yes	612	10.09
Quinnipiac Potato Phosphate, 1916	Fall River	Yes	160	10.43
“ “ “ “	Southwick		788	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total					Total		Available			
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed
1.07	.26	.52	Passed	1.85	1.65	4 27	5.17	1.40	10.84	10.00	9.44	9.00	.80	1.00
2.03	.39	.88	Passed	3.30	2.47	5 20	4.60	1.25	11.05	10.00	9.80	9.00	1.12	1.00
1.00	.44	.58	Passed	2.02	1.65	6.67	4.81	.89	12.37	11.00	11.48	10.00	1.22*	1.00
2.46	.70	.88	Passed	4.04	3.29	4.44	4.77	1.15	10.36	10.00	9.21	9.00	1.01	1 00
.86	1.11	.61	Passed	2.58	2.06	5.07	3.74	.99	9.80	9.00	8.81	8.00	.97*	1.00
1.79	.66	.85	Passed	3.30	2.47	4.63	4.64	1.45	10.72	10.00	9.27	9.00	1.03	1 00
2.59	None	.86	Passed	3.45	3.29	4.40	5 12	.99	10.51	10.00	9.52	9.00	.93	1.00
1.36	.21	.59	Passed	2.16	1.65	5.49	4.61	1.10	11.20	11.00	10.10	10.00	1.00	1.00
3.11	.40	.99	Passed	4.50	4.11	4.31	3.93	1.30	9.54	9.00	8.24	8.00	1.12	1.00
.74	.55	.33	Passed	1.62	.82	3.83	5.21	.89	9.93	9.00	9.04	8.00	1.03*	1.00
1.79	.26	83	Passed	2.88	2.47	4.27	5.12	1.12	10.51	10.00	9 39	9 00	1.00	1.00
2.60	.41	.91	Passed	3.92	3.70	4.38	3.96	1.07	9.41	9.00	8.34	8.00	1.03	1.00
2.55	.44	.95	Passed	3.94	3.20	4.46	5.31	1.20	10.97	10.00	9.77	9.00	1.14	1.00
2.41	.33	.85	Passed	3.59	3.20	4.95	4.97	.74	10.66	10.00	9.92	9.00	1.01	1 00
.74	.22	.48	Passed	1.44	.82	4.72	3.93	.84	9.49	9.00	8.65	8.00	1.01	1 00
1.37	.46	.59	Passed	2.42	2.06	3.55	5.31	1.07	9.93	9.00	8.86	8.00	1 03	1 00
1.49	.22	.69	Passed	2.40	2.06	5 20	5.06	1.22	11.48	11.00	10.26	10.00	1.22	1.00
2.18	.52	1 20	Passed	3.90	3.29	2.40	6 35	2.27	11.02	10.00	8.75	9.00	1.26	1.00
1.31	.24	.68	Passed	2.23	1.65	4.03	6.07	1.53	11.63	11.00	10.10	10.00	1.22	1.00
1.24	.32	.57	Passed	2.13	2.06	3.35	5,58	.79	9.72	9.00	8.93	8.00	1.05	1 00
1.14	.71	.56	Passed	2.41	1.65	5.49	5.33	.74	11.56	11.00	10.82	10.00	1.03	1.00
1.41	.31	.66	Passed	2.38	2.06	5.33	4.80	1.40	11.53	11.00	10.13	10.00	1.12	1.00
.69	.44	.38	Passed	1.51	.82	4.15	5.62	.74	10.51	9.00	9.77	8.00	1.01*	1.00
1.25	.08	.63	Passed	1.96	1.65	5.33	4.98	1.22	11.53	11.00	10.31	10.00	1.12	1.00
2.36	.68	.90	Passed	3.94	3.29	4.97	4.36	1.05	10.38	10.00	9.33	9 00	.91	1.00
1.82	.27	.85	Passed	2.94	2.47	3.70	5.36	1.40	10.46	10.00	9.06	9.09	1.09	1.00
1.55	.48	.79	Passed	2.82	2.47	4.38	4.58	.99	9.95	10.00	8.96	9.00	1.14	1.00
1.97	.33	.94	Passed	3.24	2.47	4.18	5.41	1.38	10.97	10.00	9.59	9 00	1.08	1.00
1.42	.47	.67	Passed	2.56	2.06	3.83	5.08	.84	9.75	9.00	8.91	8.00	1.07	1.00

*No. 1234 Chlorine .12% Equivalent to .16% potash, 1.06% potash as sulfate.
1237 " .09% " " .12% " .85% " " "
817 " .68% " " .90% " .13% " " "
847–895 " .66% " " .89% " .12% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
American Agric. Chem. Co., —(*Concluded.*)				
Read's Farmers' Friend Superphosphate, 1916	S. Deerfield	Yes	195	10.12
“ “ “ “ “	S. Hadley		1092	
Read's Practical Fertilizer, 1916	S. Deerfield	Yes	197	8.74
“ “ “ “	Rehoboth		723	
“ “ “ “	Norton		730	
“ “ “ “	S. Hadley		1086	
Read's Vegetable and Vine Fertilizer	S. Deerfield	Yes	196	10.91
“ “ “ “ “	Rehoboth		722	
Standard Complete Manure	Wadsworth	Yes	1250	13.10
Standard Complete Fertilizer	Merrimac	Yes	1258	12 18
Standard Fertilizer 1916	Whitman	Yes	479	11.14
Standard Guano, 1916	Spencer	Yes	1000	8.46
Standard Special for Potatoes, 1916	Whitman	Yes	478	11.02
Wheeler's Corn Fertilizer, 1916	Dighton	Yes	338	11 27
“ “ “ “	Boxboro		906	
Wheeler's Havana Tobacco Grower, 1916	Dighton	Yes	335	10.64
“ “ “ “ “	Boxboro		908	
“ “ “ “ “	Sheffield		1151	
Wheeler's Potato Manure, 1916	Pepperell	Yes	865	11.71
“ “ “ “	Littleton		907	
“ “ “ “	West Woburn		1137	
Williams and Clark Americus Ammo. Superphos., 1916	Southboro	Yes	1009	11.65
Williams and Clark Americus Corn Phosphate, 1916	Norwood	Yes	453	11.66
“ “ “ “ “ “ “	Medway		772	
“ “ “ “ “ “ “	Southboro		1008	
Williams and Clark Americus High Grade Spec. 1916	Norwood	Yes	460	11 45
“ “ “ “ “ “ “ “	Southboro		1006	
Williams and Clark Americus Potato Manure, 1916	Norwood	Yes	467	10.51
“ “ “ “ “ “ “	Medway		770	
“ “ “ “ “ “ “	Stow		904	
“ “ “ “ “ “ “	Southboro		1007	
“ “ “ “ “ “ “	Webster		1020	
Williams and Clark Americus Royal Bone Phosphate	Ludlow	Yes	1236	12.03
Williams and Clark Special Prolific Crop Producer	Ludlow	Yes	1235	10.44
A A. C. Co.'s Complete Tobacco Manure	N. Amherst	Yes	104	7.85
“ “ “ “	Amherst		752	
A. A. C. Co.'s Complete Tobacco Manure	Plainville	Yes	1202	6.79
A. A. C. Co.'s Grass and Lawn Top Dressing, 1916	S. Deerfield	Yes	198	10.25
“ “ “ “ “ “ “	Boston		379	
“ “ “ “ “ “ “	Norwood		452	
A. A. C. Co.'s Grass and Lawn Top Dressing, 1916	Greenfield	Yes	892	11.01
“ “ “ “ “ “ “	Fitchburg		949	
“ “ “ “ “ “ “	Marlboro		1068	
A. A. C. Co.'s Grass and Lawn Top Dressing, 1916	Palmer	Yes	1047	11 80
A. A. C. Co.'s Great Harvester Potato Manure, 1916	Fitchburg	Yes	944	10 49
A. A. C Co's High Grade Fertilizer, 1916	S. Hadley	Yes	1087	11.47
“ “ “ “ “	Williamsburg		1111	
“ “ “ “ “	Adams		1159	
A. A. C. Co.'s Special Grass and Garden Mixture, 1916	Medway	Yes	773	7 75
A. A. C. Co.'s Special Grass and Garden Mixture, 1916	N. Attleboro	Yes	775	10.17
A. A. C. Co.'s Top Dresser, 1916	Littleton	Yes	1132	10 37
“ “ “ “	N. Wilbraham		1198	
Valley Special Complete Fertilizer	Sunderland	Yes	1164	11.80

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total					Total		Available			
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed
1.40	.38	.75	Passed	2.53	2.06	3.62	4.93	1.22	9.77	9.00	8.55	8.00	.97	1.00
.53	.46	.45	Passed	1.44	.82	4.08	5.08	.84	10.00	9.00	9.16	8.00	.97	1.00
1.79	.33	.82	Passed	2.94	2.47	4.78	4.56	1.45	10.79	10.00	9.34	9.00	1.10	1.00
2.65	.48	1.02	Passed	4.15	3.29	—	9.12	1.08	10.20	10.00	9.12	9.00	1.07	1.00
2.23	1.02	69	Passed	3.94	3.29	3.83	5.53	1.05	10.41	10.00	9.36	9.00	1.02	1.00
1.20	.33	.54	Passed	2.07	1.65	5.27	4.73	1.10	11.10	11.00	10.00	10.00	1.09	1.00
.58	.43	.35	Passed	1.36	.82	3.32	5.69	.84	9.85	9.00	9.01	8.00	.84	1.00
1.24	.40	.74	Passed	2.38	2.06	3.87	5.46	1.05	10.38	9.00	9.33	8.00	1.20	1.00
1.23	.44	.68	Passed	2.35	1.65	5.01	5.39	1.28	11.68	11.00	10.40	10.00	1.00	1.00
1.64	.50	.72	Passed	2.86	2.47	5.36	4.76	1.33	11.45	10.00	10.12	9.00	1.06*	1.00
1.36	.29	.71	Passed	2.36	2.06	5.08	5.79	1.12	11.99	11.00	10.87	10.00	1.05	1.00
1.85	.43	.79	Passed	3.07	2.47	5.68	4.12	.99	10.79	10.00	9.80	9.00	1.10*	1.00
1.19	.50	.58	Passed	2.27	1.65	6.00	4.95	1.02	11.97	11.00	10.95	10.00	.88	1.00
2.40	.73	.81	Passed	3.94	3.29	5.46	4.21	1.07	10.74	10.00	9.67	9.00	1.01.	1.00
1.65	1.53	.68	Passed	3.86	2.06	5.04	4.20	1.25	10.49	9.00	9.24	8.00	.78*	1.00
1.33	.38	.60	Passed	2.31	1.23	7.05	3.98	1.22	12.25	11.00	11.03	10.00	1.00*	1.00
.47	.43	.39	Passed	1.29	.82	3.76	5.09	1.10	9.95	9.00	8.85	8.00	.86	1.00
1.09	.59	3.53	Passed	5.21	4.53	1.34	2.67	1.07	5.08	4.00	4.01	3.00	1.72*	1.00
.99	.57	3.41	Passed	4.97	4.53	1.38	2.50	.13	4.01	4.00	3.88	3.00	1.08*	1.00
2.44	.54	1.09	Passed	4.07	3.70	4.21	4.15	1.33	9.69	9.00	8.36	8.00	1.05	1.00
2.70	.34	1.04	Passed	4.08	3.70	3.93	5.15	.97	10.05	9.00	9.08	8.00	1.05	1.00
2.56	.49	.99	Passed	4.04	3.70	3.06	5.36	1.40	9.82	9.00	8.42	8.00	1.01	1.00
2.59	.53	1.12	Passed	4.24	4.11	3.89	4.30	1.61	9.80	9.00	8.19	8.00	1.03	1.00
1.76	.34	.78	Passed	2.88	2.47	5.17	4.86	.71	10.74	10.00	10.03	9.00	1.03	1.00
7.56	.55	1.05	Passed	9.16	8.23	3.57	1.79	.92	6.28	6.00	5.36	5.00	1.10	1.00
6.98	1.23	1.56	Passed	9.77	8.23	3.48	2.13	.74	6.35	6.00	5.61	5.00	1.05*	1.00
2.80	.51	.98	Passed	4.29	4.11	4.32	4.15	1.86	10.33	9.00	8.45	8.00	1.08	1.00
2.27	.45	.94	Passed	3.66	3.29	5.42	4.04	1.48	10.94	10.00	9.46	9.00	1.05*	1.00

*No. 335–908–1151 Chlorine .69%, Equivalent to .93% potash, .13% potash as sulfate.
1009 " .14% " " .19% " .91% " " "
467–770–904+ " .50% " " .66% " .12% " " "
1236 " .06% " " .08% " .92% " " "
104–752 " .22% " " .30% " 1.42% " " "
1202 " .10% " " .13% " .95% " " "
775 " .64% " " .85% " .20% " " "
1164 " .21% " " .28% " .77% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Armour Fertilizer Works, Baltimore, Md.				
Armour's Fish and Potash No. 2	Taunton	Yes	232	8.36
“ “ “ “ “	Newton Lr. Falls		682	
“ “ “ “ “	Whitman		736	
Armour's Fish and Potash No. 2	Uxbridge	Yes	1028	9.15
Armour's Grain Grower	Worcester	No	1077	8.60
Armour's 4-8-1 Fertilizer	Taunton	Yes	230	7.30
“ “ “	N. Hadley		708	
Armour's 4-8-2 Fertilizer	Worcester	No	1076	8.40
Armour's Special Tobacco Grower No. 1	N. Hadley	Yes	67	8.57
Armour's 3-8-1	Taunton	Yes	233	7.57
“ “	Whitman		476	
“ “	Lynn		533	
“ “	Billerica		610	
Armour's 3-8-1	Plainville	Yes	801	7.76
“ “	Bedford		809	
“ “	Millbury		1073	
Armour's 3½-8-1	Man'f'tr's Sample	Yes	1247	8.87
Armour's Wheat, Corn and Oats Special	Newburyport	Yes	462	7.74
“ “ “ “ “ “	Whitman		475	
“ “ “ “ “ “	Billerica		613	
Armour's Wheat, Corn and Oats Special	Newton Lr. Falls	Yes	681	7.58
“ “ “ “ “ “	Plainville		781	
Baugh and Sons Co., Philadelphia, Pa.				
Complete Animal Base Fertilizer	N. Dighton	Yes	336	11.07
“ “ “ “	Marblehead		535	
“ “ “ “	Attleboro Falls		778	
“ “ “ “	Millville		965	
Grand Rapid High Grade Guano	Dighton	Yes	247	7.82
High Grade Potato Grower, “Big Potato” Brand	Millville	Yes	1026	8.45
Beach Soap Co., Lawrence, Mass.				
Beach's Advance Brand	Lawrence	Yes	619	7.98
“ “ “	Lawrence		633	
Beach's Lawn Dressing	Lawrence	Yes	632	6.63
“ “ “	Lawrence		636	
Beach's Market Garden Fertilizer	Lawrence	Yes	625	6.97
“ “ “ “	Lawrence		629	
Beach's Top Dressing Fertilizer	Lawrence	Yes	635	6.67
Berkshire Fertilizer Co., Bridgeport, Conn.				
Berkshire Complete Fertilizer	Sunderland	Yes	110	7.43
“ “ “	Sunderland		706	
“ “ “	N. Hadley		1144	
Berkshire Long Island Special	Man'ft'rs Sample	Yes	1240	7.60
Berkshire Tobacco Special	N. Amherst	Yes	433	4.78
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.				
All Round Fertilizer, 1916	Bridgewater	Yes	495	11.91
“ “ “ “	Leominster		828	
Bowker's Ammoniated Food for Flowers	Boston	Yes	1075	3.92
Bowker's Blood, Bone and Potash, 1916	Woburn	Yes	1131	12.17

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Total		Water Soluble	Reverted	Insoluble	Total		Available		Found	Guaranteed
				Found	Guaranteed				Found	Guaranteed	Found	Guaranteed		
.68	.28	1.19	Passed	2.15	2.05	4.66	3.35	.69	8.70	8.50	8.01	8.00	1.07	1.00
.38	.48	.95	Passed	1.81	2.05	6.70	2.87	.74	10.31	8.50	9.57	8.00	1.28	1.00
.77	.09	.70	Inferior	1.56	1.65	5.49	2.73	.56	8.78	8.50	8.22	8.00	1.78*	2.00
1.66	.09	1.73	Passed	3.48	3.29	4.44	4.03	.31	8.78	8.50	8.47	8.00	1.14	1.00
.82	1.03	1.41	Passed	3.26	3.29	5.10	2.92	1.45	9.47	8.50	8.02	8.00	1.82	2.00
.86	.09	2.91	Passed	3.86	4.11	3.00	2.03	.94	5.97	4.50	5.03	4.00	1.05*	1.00
1.29	.17	1.02	Passed	2.48	2.47	5.55	2.46	.69	8.70	8.50	8.01	8.00	1.07	1.00
1.44	.04	1.09	Passed	2.57	2.47	5.93	2.59	.54	9.06	8.50	8.52	8.00	.95	1.00
.92	.60	1.57	Passed	3.09	2.88	6.31	1.88	.61	8.80	8.50	8.19	8.00	1.26	1.00
.26	.11	.51	Passed	.88	.82	4.44	2.76	.38	7.58	7.50	7.20	7.00	1.04	1.00
.21	.16	.57	Inferior	.94	.82	4.82	2.27	.46	7.55	7.50	7.09	7.00	1.09	1.00
.66	.51	.84	Inferior	2.01	1.65	8.20	2.74	1.71	12.65	10.00	10.94	10.00	.97	1.00
.88	.73	.61	Inferior	2.22	2.47	7.12	3.52	2.37	13.01	10.00	10.64	9.00	1.05*	1.00
2.44	.42	.61	Inferior	3.47	3.29	3.89	4.71	1.40	10.00	8.00	8.60	8.00	1.16*	1.00
1.05	1.28	1.19	Passed	3.52	2.50	.83	7.11	5.57	13.51	11.00	7.94	9.00	.99*	.80
2.69	.87	.69	Inferior	4.25	4.00	.36	5.15	7.12	12.63	9.50	5.51	7.50	1.12*	1.00
2.64	1.28	1.27	Passed	5.19	4.74	Trace	5.47	4.58	10.05	9.00	5.47	8.00	1.36*	1.00
2.21	1.48	1.86	Passed	5.55	5.00	Trace	3.63	5.87	9.50	9.00	3.63	6.00	1.38*	1.25
.82	.69	1.49	Passed	3.00	2.50	3.83	4.54	1.15	9.52	9.00	8.37	8.00	2.23*	2.00
1.52	.31	1.89	Passed	3.72	3.30	5.84	3.01	.33	9.18	9.00	8.85	8.00	2.62*	2.00
.98	1.29	2.51	Passed	4.78	4.50	.19	3.74	.28	4.21	4.00	3.93	3.00	2.54*	2.00
1.52	.31	.47	Passed	2.30	2.06	5.07	5.28	.82	11.17	11.00	10.35	10.00	1.05	1.00
2.28	.12	.16	Passed	2.56	2.47	.23	5.88	1.26	7.37	7.00	6.11	6.00	2.61*	2.00
2.73	.57	.95	Passed	4.25	4.11	3.83	4.66	1 05	9.54	9.00	8.49	8.00	.91	1.00

*No. 1077	Chlorine 1.20%	Equivalent to 1.59%	potash,	.19%	potash	as sulfate.
67	" .13%	" " .17%	"	.88%	"	" "
247	" .30%	" " .40%	"	.65%	"	" "
1026	" .42%	" " .56%	"	.60%	"	" "
619–633	" .38%	" " .51%	"	.48%	"	" "
632–636	" .43%	" " .57%	"	.55%	"	" "
625–629	" .75%	" " .99%	"	.37%	"	" "
635	" .69%	" " .92%	"	.46%	"	" "
110–706+	" .51%	" " .68%	"	1.55%	"	" "
1240	" .42%	" " .57%	"	2.05%	"	" "
433	" .76%	" " 1.01%	"	1.53%	"	" "
1075	" 1.62%	" " 2.15%	"	.46%	"	" "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Bowker Fertilizer Co., —(*Concluded.*)				
Bowker's Brighton Phosphate	Taunton	Yes	224	11.00
" " "	Dighton		243	
" " "	Milford		1024	
Bowker's Corn Phosphate	Taunton	Yes	234	12.15
" " "	Dighton		242	
" " "	N. Dighton		296	
" " "	Ipswich		504	
Bowker's Corn Phosphate	Chelmsford	Yes	521	11.20
" " "	N. Adams		658	
" " "	Framingham		674	
" " "	Whitman		735	
Bowker's Complete AlkalineTobacco Grower	Sunderland	Yes	265	7.35
" " " " "	Sunderland		266	
" " " " "	Northampton		445	
" " " " "	N. Amherst		659	
Bowker's Complete Alkaline Tobacco Grower	Hatfield	Yes	1271	7.52
Bowker's Farm and Garden Phosphate, 1916	Fall River	Yes	199	11.75
" " " " " "	Taunton		222	
" " " " " "	Dighton		244	
" " " " " "	Bridgewater		497	
" " " " " "	Natick		679	
Bowker's High Nitrogen Mixture, 1916	Dighton	Yes	228	10.85
Bowker's Hill and Drill Phosphate, 1916	Dighton	Yes	221	12.67
" " " " " "	Sunderland		267	
" " " " " "	Northampton		449	
Bowker's Hill and Drill Phosphate, 1916	N. Amherst	Yes	657	11.58
" " " " " "	Framingham		675	
" " " " " "	Wellesley		684	
Bowker's Lawn and Garden Dressing, 1916	Lynn	Yes	530	11.42
" " " " " "	Springfield		968	
Bowker's Potato Phosphate, 1916	Dighton	Yes	250	12.51
" " " "	N. Dighton		299	
" " " "	Chelmsford		565	
Bowker's Potato Phosphate, 1916	Framingham	Yes	669	12.70
" " " "	Wellesley		689	
" " " "	Whitman		734	
Bowker's Sure Crop Phosphate, 1916	Concord	Yes	700	11.29
" " " " "	Ayer		822	
" " " " "	Leominster		830	
Stockbridge Early Crop Manure, 1916	N. Dighton	Yes	295	11.94
" " " " "	Northampton		448	
" " " " "	Bridgewater		502	
" " " " "	N. Amherst		660	
" " " " "	Attleboro		776	
Stockbridge General Crop Manure, 1916	Fall River	Yes	164	12.75
" " " " "	Northampton		450	
" " " " "	Chelmsford		564	
Stockbridge General Crop Manure, 1916	Natick	Yes	678	12.52
" " " " "	Wellesley		687	
" " " " "	Concord		701	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total					Total		Available			
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed
.55	.37	.37	Passed	1.29	.82	3.19	6.56	.99	10.74	9.00	9.75	8.00	1.05	1.00
1.15	.36	.50	Passed	2.01	1.65	4.46	5.59	1.40	11.45	11.00	10.05	10.00	1.16	1.00
1.13	.30	.73	Passed	2.16	1.65	5.20	5.08	1.15	11.43	11.00	10.28	10.00	1.09	1.00
.91	.18	2.97	Passed	4.06	4.11	1.75	3.43	.38	5.56	5.00	5.18	4.00	1.03*	1.00
.86	.42	3.02	Passed	4.30	4.11	2.03	3.30	.71	6.03	5.00	5.32	4.00	1.03*	1.00
1.22	.29	.57	Passed	2.08	1.65	4.62	6.24	.59	11.45	11.00	10.86	10.00	1.05*	1.00
7.80	.13	.93	Passed	8.86	8.23	3.00	2.92	.48	6.40	6.00	5.92	5.00	1.14	1.00
1.45	.66	.67	Passed	2.78	2.47	5.10	4.51	.82	10.42	10.00	9.61	9.00	1.07	1.00
1.32	.46	.93	Passed	2.71	2.47	4.46	4.64	1.53	10.63	10.00	9.10	9.00	1.20	1.00
2.81	.36	1.25	Passed	4.42	4.11	3.80	4.81	.89	9.50	9.00	8.60	8.00	1.00	1.00
1.22	.10	.59	Passed	1.91	1.65	5.52	5.08	1.00	11.60	11.00	10.60	10.00	1.10	1.00
1.05	.37	.54	Passed	1.96	1.65	5.17	5.96	.99	12.12	11.00	11.13	10.00	1.09	1.00
.49	.33	.39	Passed	1.21	.82	5.23	5.66	.88	11.77	11.00	10.89	10.00	1.09	1.00
2.72	.23	1.32	Passed	4.27	4.11	4.30	4.36	1.17	9.83	9.00	8.66	8.00	1.03	1.00
2.39	.31	.81	Passed	3.51	3.29	4.43	5.22	.84	10.49	10.00	9.65	9.00	1.09	1.00
2.34	.45	.69	Passed	3.48	3.29	5.10	4.47	.63	10.20	10.00	9.57	9.00	1.31	1.00

*No. 265–266+ Chlorine .12% Equivalent to .16% potash, .93% potash as sulfate.
1271 " .24% " " .32% " .71% " " "
190–222+ " .38% " " .51% " .54% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Joseph Breck & Sons Corporation, Boston, Mass.				
Breck's Special Lawn and Garden Dressing, 1915	Boston	Yes	382	3.12
Breck's Lawn and Garden Dressing, 1916	Boston	Yes	387	8.04
Breck's Market Garden Manure, 1916	Boston	Yes	376	9.70
Breck's Ram's Head Pulverized Sheep Manure	Norwood	Yes	459	5.09
Breck's Sheep Manure	Boston	Yes	1338	5.92
Carter's Tested Seeds, Inc., Boston, Mass.				
Carter's Anti-Clover Fertilizer	Boston	Yes	471	12.38
Carter's Complete Grass Manure	Boston	Yes	470	8.55
Carter's General Purpose	Boston	Yes	472	12.92
Carter's Worm Eradicating Fertilizer	Boston	Yes	1238	9.73
The E. D. Chittenden Co., Bridgeport, Conn.				
Chittenden's Grass and Grain with 1% Potash	Charlton	Yes	937	11.33
" " " " " " "	West Upton		998	
Chittenden's Potato and Grain with 1% Potash	Fall River	Yes	152	9.30
" " " " " " "	Taunton		399	
" " " " " " "	Leominster		831	
Chittenden's Potato Special with 2% Potash	Fall River	Yes	191	7.17
" " " " " "	Seekonk		348	
" " " " " "	Taunton		397	
" " " " " "	Leominster		834	
Chittenden's Potato Special with 2% Potash	Southbridge	Yes	924	8.10
" " " " " "	Charlton		936	
" " " " " "	West Upton		997	
" " " " " "	N. Wilbraham		1055	
Chittenden's Potato Special with 2% Potash	Mittineague	Yes	977	8.25
Chittenden's Comp. Tobac.&Onion Fert. 2% Potash	Sunderland	Yes	116	7.22
" " " " " " "	Hatfield		409	
Chittenden's Comp. Tobac.&Onion Fert. 2% Potash	Hatfield	Yes	360	10.30
Chittenden's Comp. Tobac.&Onion Fert. 2% Potash	Hatfield	Yes	1332	10.02
Chittenden's Tobacco Special 2% Potash	Hatfield	Yes	1333	6.61
Chittenden's Vegetable and Onion Grower, 1% Potash	Fall River	Yes	158	9.23
" " " " " " "	Leominster		832	
Chittenden's Vegetable and Onion Grower, 1% Potash	Southbridge	Yes	925	10.35
" " " " " " "	Charlton		946	
" " " " " " "	Mittineague		976	
" " " " " " "	N. Wilbraham		1054	
Clay and Sons, Stratford, England.				
Clay's Fertilizer	Boston	Yes	386	14.42
" "	Boston		413	
Coe-Mortimer Co., 51 Chambers St., New York City.				
E. Frank Coe's Columbian Corn & Potato Fert., 1916	Westfield	Yes	741	12.50
" " " " " " "	Lee		1149	
" " " " " " "	Williamsburg		1218	
E. Frank Coe's Gold Brand Excelsior Guano, 1916	Dighton	Yes	391	12.82
" " " " " " "	Easthampton		518	
E. Frank Coe's Ideal Tobacco Fertilizer, 1916	Plainville	Yes	368	8.59
" " " " " "	Amherst		1170	
E. Frank Coe's Morco Top Dressing, 1916	Plainville	Yes	372	8.13
" " " " " "	Dighton		398	
E. Frank Coe's Morco Top Dressing, 1916	Easthampton	Yes	519	8.37
E. Frank Coe's Morco Top Dressing, 1916	Berlin	Yes	951	11.13
" " " " " "	Auburn		960	

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*No. 1333	Chlorine	.79%	Equivalent to	1.05%	potash,	1.43%	potash as sulfate.			
158–832	"	.22%	" "	.29%	"	.86%	"	"	"	
925–946+	"	.15%	" "	.20%	"	1.04%	"	"	"	
368–1170	"	.15%	" "	.20%	"	1.35%	"	"	"	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total					Total		Available			
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed
2.34	.30	1.33	Passed	3.97	3.29	4.57	4.13	1.86	10.56	9.00	8.70	8.00	4.42	4.00
2.45	.65	1.33	Passed	4.43	3.70	4.40	3.81	1.84	10.05	9.00	8.21	8.00	1.03	1.00
1.87	.34	.87	Passed	3.08	2.47	4.57	4.69	1.58	10.84	10.00	9.26	9.00	1.05	1.00
.16	.30	1.75	Inferior	2.21	2.50	—	—	—	1.84	1.50	—	—	4.50	1.50
—	—	—	—	1.75	—	—	—	—	2.02	—	—	—	2.85	—
6.30	.22	.30	Passed	6.82	6.58	4.27	1.95	2.07	8.29	7.00	6.22	4.50	2.52	2.00
3.19	.45	.98	Passed	4.62	4.52	6.83	3.25	3.21	13.29	12.00	10.08	10.00	1.63	1.25
1.79	1.63	.67	Passed	4.09	3.29	6.35	1.81	1.30	9.46	6.00	8.16	5.00	2.56*	2.00
.11	.19	2.06	Inferior	2.36	2.51	—	.46	—	.46	1.00	.46	—	1.90*	1.19
2.22	.84	1.32	Passed	4.38	4.12	1.82	7.78	1.45	11.05	9.00	9.60	8.00	1.53*	1.00
1.62	.44	1.66	Passed	3.72	3.29	2.42	5.67	3.52	11.61	9.00	8.09	8.00	1.24*	1.00
2.19	.48	1.22	Passed	3.89	3.29	7.31	2.15	1.89	11.35	9.00	9.46	8.00	2.09*	2.00
2.02	.23	1.11	Passed	3.36	3.29	7.21	3.34	1.01	11.56	9.00	10.55	8.00	2.19*	2.00
2.02	.56	1.10	Passed	3.68	3.29	7.14	3.11	.69	10.94	9.00	10.25	8.00	2.14*	2.00
1.99	.23	1.33	Passed	3.55	3.29	6.67	2.23	2.04	10.94	9.00	8.90	8.00	1.98*	2.00
2.15	.58	1.04	Passed	3.77	3.29	6.00	2.73	1.76	10.49	9.00	8.73	8.00	2.19*	2.00
2.39	.29	.87	Passed	3.55	3.29	6.19	2.41	1.68	10.28	9.00	8.60	8.00	2.15*	2.00
3.14	.18	1.56	Passed	4.88	4.50	2.30	1.32	—	3.62	4.00	3.62	3.00	2.48*	2.00
.96	.59	1.69	Passed	3.24	2.47	4.97	3.19	2.17	10.33	9.00	8.16	8.00	1.15*	1.00
.84	.66	1.35	Passed	2.85	2.47	4.57	5.23	1.02	10.82	9.00	9.80	8.00	1.24*	1.00
2.24	.50	2.86	Passed	5.60	4.00	.89	2.43	5.79	9.11	7.00	3.32	1.24	.21	.08
.79	.49	.44	Passed	1.72	1.23	5.17	5.32	.89	11.38	11.00	10.49	10.00	1.18	1.00
1.00	1.08	.68	Passed	2.76	2.47	4.87	4.77	.87	10.51	10.00	9.64	9.00	1.16	1.00
1.02	.29	3.41	Passed	4.72	4.53	1.59	2.60	.38	4.57	4.00	4.19	3.00	1.55*	1.00
6.46	.70	1.48	Passed	8.64	8.23	3.61	2.03	.79	6.43	6.00	5.64	5.00	1.08	1.00
7.26	.15	1.27	Passed	8.68	8.23	3.48	2.34	.71	6.53	6.00	5.82	5.00	1.00	1.00
7.34	.26	1.26	Passed	8.86	8.23	2.51	2.92	.92	6.35	6.00	5.43	5.00	1.09	1.00

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*No. 472 Chlorine 1.62% Equivalent to 2.15% potash, .41% potash and sulfate, and in organic form.
1238 " .69% " " .91% " .99% " " "
937–998 " .22% " " .29% " 1.24% " " "
152–399+ " .14% " " .18% " 1.06% " " "
191–348+ " .56% " " .74% " 1.35% " " "
924–936+ " .43% " " .57% " 1.57% " " "
977 " .42% " " .56% " 1.63% " " "
116–409 " .92% " " 1.22% " .76% " " "
360 " 1.23% " " 1.64% " .55% " " "
1332 " 1.45% " " 1.92% " .23% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Coe-Mortimer Co., *(Concluded.)*				
E. Frank Coe's New Englander Special, 1916	Williamstown	Yes	1154	9.95
E. Frank Coe's Red Brand Excelsior Guano, 1916	Easthampton	Yes	516	12.09
E. Frank Coe's Standard Potato Fertilizer, 1916	Sunderland	Yes	112	8.32
" " " " " "	Dighton		393	
" " " " " "	Williamsburg		1216	
E. Frank Coe's Universal Fertilizer	Williamsburg	Yes	1217	11.07
Eastern Chemical Co., 37 Pittsburgh St., Boston, Mass.				
I. M. P. Plant Food	Boston	Yes	615	.28
Essex Fertilizer Co., 39 North Market St., Boston, Mass.				
Essex High Grade Special 4½-9-1	Holyoke	Yes	594	9.78
Essex Manure for Corn, Grain and Grass	Leominster	Yes	825	10.03
Essex Manure for Potatoes, Roots and Veg. 4-10-1	N. Amherst	Yes	662	10.03
" " " " " " " "	Leominster		826	
" " " " " " " "	Marlboro		1063	
Essex New Tobac.Fert. with Cottonseed Meal & Fish	Easthampton	Yes	596	7.00
" " " " " " " "	N. Amherst		663	
Essex XXX Fish and Potash 2½-8-3 (1915)	Lincoln	Yes	1134	9.65
R. & J. Farquhar & Co., Boston, Mass.				
Farquhar's Pulverized Sheep Manure	Boston	No	420	57.87
Chas. W. Hastings, Stoughton, Mass.				
Ferti Flora	Boston	Yes	618	82.65
International Agricultural Corporation, Buffalo, N. Y. (Buffalo Fertilizer Works Branch.)				
Ames' Complete Grass Manure	S. Sudbury	Yes	915	9.91
Buffalo General Favorite	Charlemont	Yes	1186	10 28
Buffalo High Grade Manure	Taunton	Yes	395	12.56
" " " "	N. Amherst		784	
" " " "	Springfield		982	
Buffalo Economy	S. Deerfield	Yes	794	11.24
" "	Springfield		981	
Buffalo Economy	Charlemont	Yes	1190	12.06
Buffalo Onion and Fruit	N. Amherst	Yes	103	13.06
" " " "	Hatfield		363	
" " " "	Plainville		364	
" " " "	Plainville		542	
" " " "	Lee		1147	
Buffalo Tobacco Producer	N. Amherst	Yes	80	6.07
" " "	Hatfield		362	
" " "	Plainville		365	
" " "	Southwick		439	
Buffalo Tobacco Producer	Plainville	Yes	538	6.39
" " "	N. Hadley		651	
" " "	Hadley		1143	
Buffalo Tobacco Producer	Hatfield	Yes	1272	5.76
Listers Agricultural Chemical Works, Newark, N. J.				
Listers Celebrated Onion Fertilizer, 1916	Hatfield	Yes	357	11.53
Listers Complete Tobacco Manure	Amherst	Yes	665	11.34
Listers Corn and Potato Fertilizer, 1916	Hadley	Yes	71	9.38
" " " " " "	S. Deerfield		131	
" " " " " "	Fall River		318	
" " " " " "	Amherst		666	
Listers Corn and Potato Fertilizer, 1916	Sudbury	Yes	842	10.93
" " " " " "	S. Hadley		1089	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Total Found	Total Guaranteed	Water Soluble	Reverted	Insoluble	Total Found	Total Guaranteed	Available Found	Available Guaranteed	Found	Guaranteed
.65	.19	.32	Passed	1.16	.82	3.99	4.91	.64	9.54	9.00	8.90	8.00	1.20	1.00
2.58	.56	1.11	Passed	4.25	4.11	3.15	5.22	1.91	10.28	9.00	8.37	8.00	1.16	1.00
2.40	.44	.75	Passed	3.59	3.29	5.13	4.08	1.12	10.33	10.00	9.21	9.00	1.16	1.00
.99	.68	.28	Passed	1.95	1.65	6.95	3.70	1.03	11.68	10.00	10.65	9.00	.95*	1.00
13.46	—	—	—	13.46	13.00	24.21	.38	.28	24.87	25.30	24.59	25.30	25.50†	24.60
1.60	1.40	1.03	Passed	4.03	3.69	7.46	2.40	.88	10.74	10.00	9.86	9.00	1.20	1.00
1.43	1.01	1.03	Passed	3.47	3.29	7.59	2.55	.88	11.02	11.00	10.14	10.00	1.26	1.00
1.27	1.46	1.12	Passed	3.85	3.28	7.72	2.43	1.10	11.25	11.00	10.15	10.00	1.38	1.00
.82	.86	2.66	Passed	4.34	4.10	2.87	2.86	1.01	6.74	6.00	5.73	5.00	1.40*	1.00
.91	.78	.74	Passed	2.43	2.00	4.40	2.46	1.56	8.42	9.00	6.86	8.00	2.89	3.00
.05	.03	.79	Inferior	.87	1.25	—	—	–	.87	.90	--	—	1.03	2.00
3.30	—	—	—	3.30	3.25	3.25	--	--	3.25	3.66	3.25	3.66	3.53‡	3.30
2.86	.50	1.62	Passed	4.98	4.52	6.99	2.68	.94	10.61	12.00	9.67	10.00	1.20	1.25
.47	—	.55	Passed	1.02	.80	2.87	5.78	.66	9.31	9.00	8.65	8.00	.99	1.00
1.67	.42	1.22	Passed	3.31	3.30	5.40	3.81	1.12	10.33	9.00	9.21	8.00	1.05	1.00
.82	.18	1.02	Passed	2.02	1.60	6.38	3.65	1.76	11.79	11.00	10.03	10.00	.82	1.00
.77	.06	.99	Passed	1.82	1.60	5.68	4.66	.56	11.00	11.00	10.34	10.00	1.06	1.00
1.33	.28	1.15	Passed	2.76	2.40	6.59	3.79	1.25	11.63	11.00	10.38	10.00	1.12	1.00
.77	.42	2.96	Passed	4.15	4.10	.54	3.74	2.58	6.86	5.00	4.28	4.00	1.69*	1.00
1.68	.68	2.31	Passed	4.67	4.10	1.36	2.77	1.15	5.28	5.00	4.13	4.00	1.24*	1.00
1.23	.34	2.96	Passed	4.53	4.11	2.93	3.28	.87	7.08	5.00	6.21	4.00	1.40*	1.00
3.07	.68	.78	Passed	4.53	4.11	3.32	5.64	.99	9.95	9.00	8.96	8.00	.97*	1.00
1.95	.47	1.61	Passed	4.03	4.11	1.15	3.58	1.65	6.38	5.00	4.73	4.00	.92*	1.00
1.21	.41	.61	Passed	2.23	2.06	3.42	5.15	1.43	10.00	9.00	8.57	8.00	.95	1.00
1.45	.24	.74	Passed	2.43	2.06	3.04	6.18	.71	9.93	9.00	9.22	8.00	.93	1.00

*No. 1217 Chlorine .07% Equivalent to .09% potash, .86% potash as sulfate.
†No. 615 Potash present as nitrate.
*596–663 Chlorine .27% Equivalent to .35% potash, 1.05% potash as sulfate.
‡618 Only traces of chlorine present.
*80–362+ Chlorine .18% Equivalent to .24% potash, 1.45% potash as sulfate.
*538–651+ “ .08% “ “ .11% “ 1.13% “ “ “
*1272 “ .18% “ “ .24% “ 1.16% “ “ “
*357 “ .59% “ “ .78% “ .19% “ “ “
*665 “ .33% “ “ .44% “ .48% “ “ “

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Listers Agricultural Chemical Works, —(*Concluded.*)				
Listers High Grade Special for Spring Crops, 1916	S. Hadley	Yes	1088	10.92
Listers Potato Manure, 1916	Graniteville	Yes	988	12.14
“ “ “ “	S. Hadley		1090	[illegible]
Listers Special Tobacco Fertilizer, 1916	Hadley	Yes	70	11.94
Listers Standard Grass Fertilizer	Man'f't'rs Sample	Yes	1253	10.02
Listers Standard Pure Superphos. of Lime, 1916	Hadley	Yes	62	11.91
Listers Success Fertilizer, 1916	Hadley	Yes	77	12.71
“ “ “ “	Sudbury		850	
“ “ “ “	Walpole		1112	
Mapes Formula and Peruvian Guano Co., New York City.				
Mapes Corn Manure, War Brand	Boston	Yes	406	10.23
“ “ “ “ “	Northampton		514	
“ “ “ “ “	Fitchburg		942	
“ “ “ “ “	Springfield		983	
Mapes General Special, War Brand	Fitchburg	Yes	948	6.70
Mapes General Special, War Brand	Northampton	Yes	515	7.14
Mapes Potato Manure, War Special	Boston	Yes	405	9.40
“ “ “ “ “	Northampton		513	
“ “ “ “ “	Sunderland		714	
Mapes Potato Manure, War Brand	Conway	Yes	886	9.43
“ “ “ “ “	Fitchburg		943	
“ “ “ “ “	Springfield		985	
Mapes Tobacco Manure, War Brand	Plainville	Yes	546	7.59
“ “ “ “ “	Sunderland		716	
Mapes Tobacco Starter, Improved	Northampton	Yes	512	7.59
“ “ “ “	Southwick		786	
“ “ “ “	Conway		884	
Mapes Top Dresser	Boston	Yes	404	5.76
Mapes Top Dresser, Half Strength	Boston	Yes	401	4.12
The Mitchell Fertilizer Co., Tremley, N. J.				
Mitchell's Vegetable Fertilizer, 1916	Rehoboth	Yes	340	9.02
National Fertilizer Co., 92 State St., Boston, Mass.				
National Ammoniated Bone Phosphate, 1916	Man'f't'rs Sample	Yes	1242	9.47
National Complete Root and Grain Fertilizer	Framingham	Yes	1011	11.40
National Market Garden Fertilizer	Man'f't'rs Sample	Yes	1241	9.61
National Eureka Potato Fertilizer, 1916	Dighton	Yes	425	10.21
“ “ “ “ “	S. Acton		905	
“ “ “ “ “	Framingham		1010	
“ “ “ “ “	Stow		1128	
National High Grade Top Dressing, 1916	Stow	Yes	1127	10.70
“ “ “ “ “ “	Conway		1177	
National Potato Phosphate, 1916	Swansea	Yes	344	9.70
“ “ “ “	Dighton		392	
“ “ “ “	Framingham		1014	
National Special Complete Fertilizer	Montague	Yes	1161	10.55
National Premium Fertilizer, 1916	Sunderland	Yes	271	8.88
“ “ “ “	N. Hadley		647	
National Tobacco Special	Hatfield	Yes	352	8.44
“ “ “	Bradstreet		492	
National XXX Fish and Potash, 1916	Sunderland	Yes	171	11.63
“ “ “ “ “ “	W. Springfield		569	
“ “ “ “ “ “	N. Hadley		645	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total					Total		Available			
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed
1.46	.46	.58	Passed	2.50	2.06	4.59	6.15	.92	11.66	11.00	10.74	10.00	1.01	1.00
2.68	.34	1.24	Passed	4.26	4.11	2.84	5.72	1.21	9.77	9.00	8.56	8.00	.93	1.00
1.45	.33	.75	Passed	2.53	2.06	4.89	5.26	.87	11.02	11.00	10.15	10.00	.93†	1.00
1.80	.36	.92	Passed	3.08	2.47	4.91	5.15	.55	10.61	10.00	10.06	9.00	1.01	1.00
1.61	.38	.90	Passed	2.89	2.47	3.61	5.68	.79	10.08	10.00	9.29	9.00	1.00	1.00
.86	.23	.52	Passed	1.61	1.23	4.82	5.84	.54	11.20	11.00	10.66	10.00	1.10	1.00
1.71	.02	.98	Inferior	2.71	2.47	.27	9.44	2.03	11.74	10.00	9.71	8.00	1.16	1.00
5.29	.14	1.39	Passed	6.82	5.76	.77	6.29	1.82	8.88	8.00	7.06	6.00	1.47	1.00
4.54	.25	1.88	Passed	6.67	5.76	.23	6.86	2.25	9.34	8.00	7.09	6.00	1.20*	1.00
3.08	.55	.92	Passed	4.55	3.71	.56	8.40	1.24	10.20	8.00	8.96	8.00	1.18*	1.00
3.17	.28	.87	Passed	4.32	3.71	.97	7.84	1.01	9.82	8.00	8.81	8.00	.97*	1.00
5.92	.38	2.75	Passed	9.05	8.23	.55	7.35	.75	8.65	8.00	7.90	—	1.57*	1.00
2.29	.14	2.12	Passed	4.55	4.12	.36	7.82	1.49	9.67	8.00	8.18	6.00	1.26*	1.00
9.56	.28	.56	Passed	10.40	9.88	.64	7.64	.60	8.88	8.00	8.28	5.00	1.35	1.00
3.62	.43	.71	Passed	4.76	4.94	.55	2.91	1.16	4.62	4.00	3.46	2.50	.74*	.50
1.48	.89	1.28	Passed	3.65	3.29	6.67	2.79	1.48	10.94	10.00	9.46	9.00	1.03	1.00
1.36	.24	.76	Passed	2.36	1.65	5.78	5.10	.91	11.79	11.00	10.88	10.00	1.03	1.00
2.35	.20	.84	Passed	3.39	3.29	5.17	4.95	.98	11.10	10.00	10.12	9.00	1.01	1.00
1.81	.20	1.03	Passed	3.04	2.47	5.65	4.32	.77	10.74	10.00	9.97	9.00	1.01	1.00
2.06	.39	.85	Passed	3.30	2.47	5.04	7.47	.78	13.29	10.00	12.51	9.00	1.09	1.00
7.24	.64	1.10	Passed	8.98	8.23	3.67	2.46	.38	6.51†	6.00	6.13	5.00	1.18	1.00
1.24	.70	.74	Passed	2.68	2.06	3.80	4.62	1.22	9.64	9.00	8.42	8.00	.99	1.00
2.48	.22	.90	Passed	3.60	3.29	5.40	4.98	.69	11.07	10.00	10.38	9.00	1.02	1.00
2.16	.35	1.21	Passed	3.72	3.29	5.87	4.25	1.21	11.33	10.00	10.12	9.00	1.32*	1.00
1.05	.18	3.72	Passed	4.95	4.53	1.15	4.01	.45	5.61	4.00	5.16	3.00	1.36*	1.00
1.50	.53	.82	Passed	2.85	2.06	4.89	5.80	1.10	11.79	11.00	10.69	10.00	1.07	1.00

†No. 70	Potash as sulfate						
*515	Chlorine	.39%	Equivalent to	.53%	potash,	.67%	potash as sulfate.
405–513+	“	.38%	“ “	.53%	“	.65%	“ “ “
886–943+	“	.30%	“ “	.40%	“	.57%	“ “ “
546–716	“	.69%	“ “	.91%	“	.66%	“ “ “
401	“	.41%	“ “	.54%	“	.20%	“ “ “
512–786+	“	.28%	“ “	.37%	“	.89%	“ “ “
271–647	“	.37%	“ “	.49%	“	.83%	“ “ “
352–492	“	.45%	“ “	.60%	“	.76%	“ “ “

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
National Fertilizer Co.—(*Concluded.*)				
National XXX Fish and Potash, 1916	N Hadley	Yes	649	9.79
" " " " " "	S. Acton		910	
" " " " " "	Framingham		1013	
Natural Guano Co., Aurora, Ill.				
Sheep's Head Brand Pulverized Sheep Manure	Amesbury	Yes	461	6.59
" " " " " "	Lynn		529	
" " " " " "	Wellesley		686	
" " " " " "	Concord		693	
" " " " " "	Leominster		829	
Sheep's Head Brand Pulverized Sheep Manure	Monson	Yes	1052	7.61
" " " " " "	Holyoke		1106	
New England Fert. Co., 40A No. Market St., Boston, Mass.				
New England Complete Manure for Potato & Veg.	N. Hatfield	Yes	640	8.93
" " " " " " "	N. Hatfeld		1227	
New England Special Onion **4-10-1**	N. Hatfield	Yes	642	8.30
New England Tobacco Grower, Cot'seed Meal & Fish	N. Hatfield	Yes	641	6.11
" " " " " " "	S. Deerfield		1176	
" " " " " " "	N. Hatfield		1226	
Nitrate Agencies Co., New York City.				
Pescadores High Grade Genuine Peruvian Guano	S. Deerfield	Yes	133	15.77‡
Peruvian Guano	Titicut	Yes	123	12.96
Olds & Whipple, Hartford, Conn.				
O. & W. Complete Corn, Potato and Onion	Hadley	Yes	286	7.49
O. & W. Complete Tobacco Fertilizer	Hatfield	Yes	359	8.03
" " " "	Plainville		540	
O. & W. Complete Onion Fertilizer	Hadley	Yes	280	8.12
Parmenter & Polsey Fertilizer Co., Boston, Mass.				
P. & P. A. A. Brand **5-8-1**	W. Springfield	Yes	568	7.80
" " " "	Auburn		958	
P. & P. Special Tobacco Grower, **5-5-1**	Easthampton	Yes	1121	6.38
. T. Prentiss, Holyoke, Mass.				
Complete for Potatoes, **3-8-1**	W. Springfield	Yes	571	9.73
" " " "	Easthampton		595	
" " " "	Holyoke		1105	
Complete for Top Dressing	Holyoke	Yes	597	8.40
" " " "	Holyoke		1107	
The Pulverized Manure Co., Chicago, Ill.				
Wizard Brand Shredded Cattle Manure	Taunton	Yes	215	8.32
" " " " "	Springfield		1043	
Wizard Brand Pulverized Sheep Manure	Tauntion	Yes	213	8.24
" " " " "	Amherst		751	
" " " " "	Springfield		1044	
Wizard Brand Pulverized Manure	Taunton	Yes	214	6.41
Rogers and Hubbard Co., Middletown, Conn.				
Rogers H. G. Soluble Tobacco and Potato Manure	Harvard	Yes	1245	11.35
Rogers Tobacco Grower, Vegetable Formula	Deerfield	Yes	149	7.33
Hubbard's Bone Base Soluble Potato Manure, 1916	E. Taunton	Yes	292	11.60
" " " " " " "	Plymouth		756	
" " " " " " "	Maynard		841	
Hubbard's Tobacco Special, Cottonseed Base, 1916	Hadley	Yes	73	7.40
" " " " " "	Hadley		327	

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‡No. 133. Some ammonia may be included as strong odor was detected.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total					Total		Available			
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed
1.37	.03	1.05	Passed	2.45	2.06	6.00	5.14	.83	11.97	11.00	11.14	10.00	1.03	1.00
.32	.36	1.81	Inferior	2.49	2.25	—	—	—	1.79	1.25	—	—	1.72	1.50
.26	.38	1.77	Inferior	2.41	2.25	—	—	—	1.53	1.25	—	—	1.73	1.50
1.41	.96	1.05	Passed	3.42	3.29	6.61	5.18	.84	12.63	11.00	11.79	10.00	1.24	1.00
1.47	.84	1.10	Passed	3.41	3.29	6.38	5.76	.79	12.93	11.00	12.14	10.00	1.28	1.00
.59	1.10	2.43	Passed	4.12	4.11	3.10	3.57	.55	7.22	6.00	6.67	5.00	1.35*	1.00
4.14	3.11	3.97	Passed	11.22	11.51	3.93	9.02	.24	13.19	13.00	12.95	10.00	2.75	2.50
3.46	1.81	5.31	Passed	10.58	10.69	2.58	7.77	1.77	12.12	11.00	10.35	10.00	2.71	2.50
2.09	.50	95	Passed	3.54	3.30	.80	6.63	1.30	8.73	6.00	7.43	6.00	2.31	2.00
.92	.99	3.24	Passed	5.15	4.50	.39	3.43	.75	4.57	3.00	3.83	3.00	2.32*	2.00
1.58	.56	.86	Passed	3.00	2.45	.26	8.51	1.38	10.15	8.00	8.77	8.00	2.27	2.00
1.65	1.03	1.02	Passed	3.70	4.10	7.08	2.73	.83	10.64	9.00	9.81	8.00	1.03	1.00
.47	1.09	2.48	Passed	4.04	4.10	3.35	3.37	.88	7.60	6.00	6.72	5.00	1.26*	1.00
1.28	.22	.97	Passed	2.47	2.47	5.52	2.75	.63	8.90	8.50	8.27	8.00	1.05	1.00
.70	.52	2.68	Passed	3.90	4.11	1.82	2.81	.45	5.08	4.50	4.63	4.00	1.18	1.00
.13	.18	1.55	Inferior	1.86	1.80	—	—	—	1.03	1.00	—	—	1.41	1.00
.19	.28	1.57	Inferior	2.04	1.80	—	—	—	1.35	1.00	—	—	2.75	1.00
.15	.33	1.32	Inferior	1.80	1.80	—	—	—	1.17	1.00	—	—	1.84	1.00
2.25	.78	1.32	Passed	4.35	4.25	1.19	10.87	5.11	17.17	16.00	12.06	10.00	1.12	1.00
.86	.59	3.69	Passed	5.14	5.00	.36	6.03	1.29	7.68	7.00	6.39	4.00	.95*	.50
2.23	.83	1.55	Passed	4.61	4.25	.68	13.14	3.55	17.37	16.00	13.82	10.00	1.09	1.00
.94	.47	3.62	Passed	5.03	5.00	.45	6.15	1.61	8.21	7.00	6.60	4.00	.91*	.50

*No. 641-1176+ Chlorine .33% Equivalent to .41% potash, .91% potash as sulfate.
359-540 " .20% " " .26% " 2.06% " " "
1121 " .39% " " .52% " .74% " " "
149 " .46% " " .62% " .33% " " "
73-327 " .37% " " .49% " .42% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Ross Bros. Co., Worcester, Mass.				
Corn, Grass and Grain Fertilizer	Worcester	Yes	854	6.28
Corn, Grass and Grain Fertilizer	Auburn	Yes	957	8.90
Corn, Grass and Grain Fertilizer	Paxton	Yes	1001	7.25
High Grade Potato and Vegetable Fertilizer	Worcester	Yes	855	5.95
Potato and Vegetable Fertilizer	Worcester	Yes	853	6 33
“ “ “ “	Worcester		991	
Spring Grass Top Dressing	Worcester	Yes	861	8.78
“ “ “ “	Uxbridge		1027	
Worcester Special Lawn Dressing, 1915	Worcester	Yes	852	11.40
Worcester Special Lawn Dressing, 1915	Paxton	No	1002	9.72
Worcester Lawn Dressing, 1916	Worcester	Yes	990	7.03
F. S. Royster Guano Co., Baltimore, Md.				
Royster's Arrow Head Tobacco Fertilizer	Westfield	No	738	6.10
Royster's Cuckoo Crop Grower	Middleboro	Yes	501	8.41
“ “ “ “	Holyoke		1100	
“ “ “ “	S. Williamstown		1156	
Royster's Defender Fertilizer	Middleboro	Yes	500	8.69
“ “ “	Holyoke		1098	
“ “ “	Orange		1189	
Roysters' Drill Well Phosphate	Holyoke	Yes	1099	8.88
“ “ “ “	Cheshire		1187	
“ “ “ “	Orange		1188	
Royster's Log Cabin Guano	S. Williamstown	Yes	1157	8.45
“ “ “ “	Orange		1191	
Royster's Logical Compound	Charlemont	Yes	1184	8.30
Royster's Pipe of Peace Tobacco Fertilizer	Montague	No	1197	4.13
Royster's Vim Top Dresser	Westhampton	Yes	1231	7.60
Royster's Trucker's Delight (1915 Goods)	Woburn	Yes	807	5.68
Royster's Favorita Compound (1915 Goods)	Woburn	Yes	812	8.69
Sanderson Fertilizer and Chemical Co., New Haven, Conn.				
Sanderson's Atlantic Coast Bone, Fish & Potash 1916,	N. Amherst	Yes	78	7.41
“ “ “ “ “ “ “	S. Deerfield		193	
“ “ “ “ “ “ “	Weir Village		212	
“ “ “ “ “ “ “	E. Taunton		601	
Sanderson's Atlantic Coast Bone, Fish & Potash, 1916	Whately	Yes	96	8.42
“ “ “ “ “ “ “	Fall River		346	
“ “ “ “ “ “ “	N. Hadley		717	
Sanderson's Complete Tobacco Grower, 1916	N. Amherst	Yes	79	9.46
“ “ “ “ “	S. Deerfield		194	
“ “ “ “ “	Southwick		438	
“ “ “ “ “	Plainville		537	
Sanderson's Complete Tobacco Grower, 1916	N. Hadley	Yes	648	8.68
“ “ “ “ “	N. Hadley		718	
“ “ “ “ “	Sunderland		793	
“ “ “ “ “	Agawam		1042	
Sanderson's Corn Superphosphate, 1916	E. Taunton	Yes	607	10.20
“ “ “ “	Sunderland		1163	
Sanderson's Formula "A", 1916	S. Deerfield	Yes	192	11.71
“ “ “ “	Dighton		240	
“ “ “ “	E. Taunton		605	
Sanderson's Formula "B", 1916	Northampton	Yes	1244	11.20

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total					Total		Available			
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed
1.27	.52	1.44	Passed	3.23	2.88	5.74	2.37	.41	8.52	8.50	8.11	8.00	1.14	1.00
.95	.54	1.39	Passed	2.88	2.88	6.03	2.21	.79	9.03	8.50	8.24	8.00	3.22	3.00
1.07	.59	1.32	Passed	2.98	2.88	5.71	2.47	.77	8.95	8.50	8.18	8.00	1.09	1.00
1.17	.41	1.37	Passed	2.95	2.88	5.74	2.51	.42	8.67	8.50	8.25	8.00	1.07	1.00
.32	.54	.91	Passed	1.77	1.65	4.34	3.64	1.33	9.31	8.50	7.98	8.00	1.12	1.00
2.80	.33	2.66	Passed	5.79	5.75	4.85	1.37	.41	6.63	6.50	6.22	6.00	1.14	1.00
.77	.69	1.35	Passed	2.81	2.88	5.57	2.53	1.06	9.16	8.50	8.10	8.00	4.44	4.00
.93	.63	1.49	Passed	3.05	2.88	5.52	2.49	1.12	9.13	8.50	8.01	8.00	3.68	4.00
1.13	.38	1.52	Passed	3.03	2.88	6.02	2.24	.54	8.80	8.50	8.26	8.00	1.07	1.00
.79	.25	2.59	Passed	3.63	4.11	3.19	1.67	.17	5.03	4.50	4.86	4.00	1.82*	2.00
.53	.12	.58	Passed	1.23	.82	3.02	5.45	.82	9.29	8.50	8.47	8.00	.97	1.00
1.26	.57	1.48	Passed	3.31	3.29	4.81	4.09	1.05	9.95	8.50	8.90	8.00	1.01	1.00
.92	.54	1.17	Passed	2.63	2.47	4.17	4.53	1.25	9.95	8.50	8.70	8.00	1.01	1.00
1.90	.85	1.52	Passed	4.27	4.11	4.59	4.68	1.29	10.56	8.50	9.27	8.00	.99	1.00
.53	.62	.76	Inferior	1.91	1.65	3.19	5.12	1.10	9.41	8.50	8.31	8.00	.95	1.00
.94	.13	2.71	Passed	3.78	4.11	2.45	1.27	.31	4.03	3.50	3.72	3.00	.95*	1.00
3.10	.27	.39	Passed	3.76	4.11	4.17	3.69	.87	8.73	8.50	7.86	8.00	1.32	1.00
2.16	.29	1.26	Passed	3.71	3.29	4.94	4.41	1.24	10.59	8.50	9.35	8.00	4.55	4.00
1.04	.48	.39	Passed	1.91	1.65	6.70	4.91	1.07	12.68	—	11.61	10.00	2.04	2.00
.26	.46	1.03	Passed	1.75	1.65	1.66	8.29	1.66	11.61	10.00	9.95	9.00	1.05	1.00
.30	.44	1.10	Passed	1.84	1.65	1.08	8.58	1.57	11.23	10.00	9.66	9.00	1.16	1.00
.31	.26	3.99	Passed	4.56	4.53	1.47	2.55	.80	4.82	4.00	4.02	3.00	1.05*	1.00
.29	.21	4.06	Passed	4.56	4.53	1.30	2.22	1.07	4.69	4.00	3.52	3.00	1.12*	1.00
.44	.56	.92	Passed	1.92	1.65	1.85	8.61	1.35	11.81	11.00	10.46	10.00	1.20	1.00
1.34	.65	1.43	Passed	3.42	3.29	3.64	6.11	1.30	11.05	10.00	9.75	9.00	1.34	1.00
.67	1.24	1.71	Passed	3.62	3.29	4.78	5.27	1.20	11.25	10.00	10.05	9.00	1.03*	1.00

*No. 738	Chlorine .32%	Equivalent to .43%	potash, 1.39%	potash as sulfate.
1197	" .18%	" " .25%	" .70%	" " "
79-194+	" .41%	" " .54%	" .51%	" " "
648-718+	" .29%	" " .38%	" .71%	" " "
1244	" .73%	" " .97%	" .06%	" " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Sanderson Fertilizer and Chemical Co.,—(*Concluded.*)				
Sanderson's Potato Manure, 1916	N. Amherst	Yes	81	9.85
" " " "	Taunton		288	
" " " "	Fall River		307	
" " " "	E. Taunton		600	
Sanderson's Top Dressing for Grass and Grain, 1916	Taunton	Yes	322	10.85
Springfield Rendering Co., Springfield, Mass.				
Brightwood Vegetable and Potato Grower	West Springfield	Yes	572	5.92
" " " " "	Springfield		971	
Wm. Thomson & Sons, Ltd., Clovenfords, Scotland.				
Thomson's Vine, Plant and Vegetable Manure, No. 2	Boston	Yes	414	6.57
Thomson' Vine, Plant and Veg. Manure	Boston	Yes	422	3.99
Thomson's Special Chrysanthemum Manure	Boston	Yes	375	3.04
Virginia-Carolina Chemical Co., New York City.				
B. B. B. Beef, Blood and Bone, 1% Potash	Thayer	Yes	933	8.19
High Grade Corn and Vegetable Compound 1% Potash	S. Deerfield	Yes	796	8.42
" " " " " " " "	Thayer		931	
" " " " " " " "	Holyoke		1109	
Indian Brand No. 1, for Tobacco	S. Deerfield	Yes	795	6.09
Indian Brand No. 2, for Tobacco	Sunderland	Yes	60	5.16
" " " " "	Hadley		72	
" " " " "	S. Deerfield		132	
" " " " "	Sunderland		273	
" " " " "	Hadley		279	
National Corn, Grain and Grass Top Dressing, 1% Pot.	Thayer	Yes	945	7.20
" " " " " " " "	Holyoke		1101	
Owl Brand Potato Fertilizer	Conway	Yes	882	5.44
" " " "	Thayer		932	
Star Brand Potato and Vegetable Compound, 2% Pot.	Holyoke	Yes	1108	7.56
Tobacco and Onion Special	Sunderland	Yes	61	6.38
XXX Fish and Potash	Thayer	Yes	926	6.05
Whitman and Pratt Rendering Co., Boston, Mass.				
Whitman and Pratt's 4-8-1	Billerica	Yes	577	10.02
Whitman and Pratt's 5-9-1	Lowell	Yes	1267	7.77
Whitman and Pratt's 3-8-1	Lowell	Yes	1268	7.95
Wilcox Fertilizer Co., Mystic, Conn.				
Wilcox Fish and Potash	Fall River	Yes	167	11.34
" " " "	New Bedford		176	
" " " "	Dighton		225	
" " " "	Amherst		744	
Wilcox High Grade Vegetable Fertilizer	Dighton	Yes	727	12.27
" " " " "	Amherst		749	
Wilcox Potato Fertilizer	Fall River	Yes	155	10.65
" " "	New Bedford		177	
" " "	Amherst		745	
" " "	Monson		1051	
" " "	Three Rivers		1091	
Wilcox Potato, Onion and Vegetable Phosphate	Fall River	Yes	166	9.73
" " " " " "	New Bedford		206	
" " " " " "	Amherst		746	
" " " " " "	Monson		1048	
Wilcox Tobacco Special	Sunderland	Yes	1166	7.42
A. H. Wood & Co., Framingham, Mass.				
Wood's 3-7-1 Fertilizer	Framingham	Yes	1015	7.27

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*No. 167-176+ Chlorine .12% Equivalent to .16% potash .36% potash as sulfate.
727-749 " .49% " " .66% " .35% " " "
155-177+ " .14% " " .19% " .39% " " "
166-206+ " .23% " " .30% " .26% " " "
1015 " .48% " " .64% " .47% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Total		Water Soluble	Reverted	Insoluble	Total		Available		Found	Guaranteed
				Found	Guaranteed				Found	Guaranteed	Found	Guaranteed		
.65	.39	1.46	Passed	2.50	2.06	.99	7.71	2.22	10.92	9.00	8.70	8.00	1.24	1.00
1.86	1.02	1.50	Passed	4.38	4.11	3.51	5.39	1.84	10.74	9.00	8.90	8.00	1.03	1.00
1.37	1.06	1.02	Passed	3.45	3.29	6.61	4.17	2.69	13.47	11.00	10.78	10.00	.96	1.00
2.76	.08	1.17	Passed	4.01	3.25	6.63	3.30	4.03	13.96	11.50	9.93	8.50	2.60	2.50
1.86	.65	2.03	Passed	4.54	3.25	6.00	3.74	4.73	14.47	—	9.74	7.50	6.45	5.00
4.23	.15	.64	Passed	5.02	4.25	5.20	3.18	4.43	12.81	10.50	8.38	7.00	4.05	1.50
1.21	.95	1.13	Passed	3.29	3.29	1.40	6.93	2.74	11.07	9.00	8.33	8.00	.99*	1.00
.98	.39	.97	Passed	2.34	2.47	4.15	4.41	2.49	11.05	9.00	8.56	8.00	1.12*	1.00
2.97	.14	1.24	Passed	4.35	4.10	3.99	1.67	.36	6.02	5.00	5.66	4.00	2.35*	2.00
3.02	.17	1.13	Passed	4.32	4.12	4.08	.87	.74	5.69	5.00	4.95	4.00	1.26†	1.00
1.27	.75	1.22	Passed	3.24	3.29	1.59	6.50	3.44	11.53	9.00	8.09	8.00	1.01*	1.00
.78	.15	.90	Passed	1.83	1.65	6.12	2.70	1.95	10.77	9.00	8.82	8.00	1.30*	1.00
2.61	.25	.61	Passed	3.47	3.29	9.31	1.43	2.17	12.91	9.00	10.74	8.00	2.02*	2.00
3.08	.24	.41	Passed	3.73	3.29	7.12	1.63	1.86	10.61	9.00	8.75	8.00	1.14*	1.00
1.00	.21	.56	Passed	1.77	1.65	7.18	1.50	1.75	10.43	9.00	8.68	8.00	1.03†	1.00
1.15	1.08	.92	Passed	3.15	3.26	7.63	2.25	.96	10.84	9.00	9.88	8.00	1.08	1.00
2.00	1.10	1.27	Passed	4.37	4.10	6.19	4.24	.31	10.74	10.00	10.43	9.00	1.82	1.00
1.36	.42	.72	Passed	2.50	2.46	6.76	2.03	.73	9.52	9.00	8.79	8.00	1.63	1.00
.34	.41	2.18	Passed	2.93	2.40	6.16	2.57	89	9.62	9.00	8.73	8.00	.52*	.50
2.25	.35	1.52	Passed	4.12	4.12	7.33	1.81	.38	9.52	9.00	9.14	8.00	1.01*	1.00
.72	.65	1.39	Passed	2.76	2.46	4.27	1.97	5.01	11.25	7.00	6.24	6.00	58*	50
.90	.21	2.80	Passed	3.91	3.72	6.76	2.31	1.72	10.79	9.00	9.07	8.00	.56*	50
.61	.33	4.19	Passed	5.13	4.95	.36	5.46	1.48	7.30	6.00	5.82	5.00	.72†	.50
.37	.63	2.99	Passed	3.99	3.00	1.91	4.49	2.27	8.67	9.00	6.40	7.00	1.11*	1.00

†Potash as sulfate.

*No.	933	Chlorine	.19%	Equivalent to	.25%	potash,	.74%	potash as sulfate.
	976-931+	"	.16%	" "	.21%	"	.91%	" " "
	795	"	.26%	" "	.35%	"	2.00%	" " "
	945-1101	"	.19%	" "	.25%	"	.76%	" " "
	882-932	"	.24%	" "	.32%	"	.98%	" " "
	1108	"	.22%	" "	.30%	"	1.72%	" " "
	61	"	.28%	" "	.38%	"	.76%	" " "

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
W. H. Abbott, Holyoke, Mass.				
Abbott's Animal Fertilizer	Sunderland	Yes	59	9.85
“ “ “	Bradstreet		408	
“ “ “	N. Hatfield		639	
“ “ “	N. Hadley		652	
Abbott's Eagle Brand	N. Hadley	Yes	654	10.78
American Agricultural Chem. Co., 92 State St., Boston, Mass.				
Ammoniated Fertilizer “A”	S. Deerfield	Yes	199	8.70
“ “ “	Rehoboth		724	
“ “ “	Whitman		725	
Ammoniated Fertilizer “A”	Whitman	Yes	732	8.84
“ “ “	Pepperell		868	
Ammoniated Fertilizer “AA”	N. Amherst	Yes	101	6.97
“ “ “	Taunton		239	
“ “ “	Pepperell		819	
Ammoniated Fertilizer “AA”	Pepperell	Yes	820	7.38
“ “ “	Marlboro		1067	
Ammoniated Fertilizer “AAA”	Taunton	Yes	235	8.57
“ “ “	Newburyport		484	
“ “ “	Whitman		814	
“ “ “	N Sudbury		840	
Ammoniated Fertilizer “AAA”	N. Sudbury	Yes	845	8.13
“ “ “	Southbridge		923	
“ “ “	Williamsburg		1110	
“ “ “	Wayland		1126	
Ammoniated Fertilizer “AAAA”	N. Amherst	Yes	102	9.25
“ “ “	N. Westport		317	
“ “ “	Greenfield		890	
“ “ “	S. Sudbury		900	
Ammoniated Fertilizer “AAAA”	Worcester	Yes	953	8.57
“ “ “	Fitchburg		941	
“ “ “	Wayland		1125	
Ammoniated Fertilizer “AAAA”	Plainville	Yes	1201	8.41
Ammoniated Fertilizer “AAAAA”	Charlemont	Yes	1183	9.51
High Grade Top Dressing without Potash, 1916	S. Sudbury	Yes	851	10.28
“ “ “ “ “ “ “	Greenfield		891	
High Grade Top Dressing without Potash, 1916	Billerica	Yes	631	9.37
Armour Fertilizer Works, Baltimore, Md.				
Armour's 5-10 Fertilizer	Rehoboth	Yes	342	10.56
Armour's 4-11 Fertilizer	E. Brookfield	Yes	1083	7.44
Baugh and Sons Co., Philadelphia, Pa.				
High Grade Ammoniated Animal Base	Dighton	Yes	251	6.36
“ “ “ “ “	N. Hanover		765	
“ “ “ “ “	Rockland		766	
High Grade Ammoniated Animal Base	Dighton	Yes	245	6.12
“ “ “ “ “	Attleboro Falls		779	
Old Standby Dissolved Animal Base	Dighton	Yes	246	10.27
“ “ “ “ “	Dighton		252	
“ “ “ “ “	N. Dighton		334	
Old Standby Dissolved Animal Base	Marblehead	Yes	536	11.24
“ “ “ “ “	Attleboro Falls		780	
“ “ “ “ “	Millville		959	

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total					Total		Available	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed
.55	.82	3.09	Passed	4.46	3.00	.56	9.39	8.85	18.79	18.00	9.94	10.00
1.35	.61	3.14	Passed	5.10	4.00	.64	10.25	5.79	16.68	16.00	10.89	8.00
.49	.24	.37	Passed	1.10	.82	6.04	6.04	2.04	12.12	11.00	10.08	10.00
.54	.16	.42	Passed	1.12	.82	5.36	5.36	1.53	12.25	11.00	10.72	10 00
.96	.39	.75	Passed	2.10	1.65	3.32	5.74	2.30	11.36	11.00	9.06	10.00
.85	.40	.69	Passed	1.94	1.65	3.35	6.50	1.99	11.84	11.00	9 85	10.00
1.52	.55	.90	Passed	2.97	2.47	4.78	5.57	1.33	11.68	11.00	10.35	10.00
1.66	.35	.84	Passed	2.85	2.47	4.37	5.73	1.89	11.99	11.00	10.10	10.00
2.18	.65	.96	Passed	3.79	3.29	5.91	4.25	1.45	11.61	11.00	10.16	10.00
1.81	.97	1.03	Passed	3.81	3.29	4.11	5.87	1.63	11.61	11.00	9.98	10.00
1.93	.81	.86	Passed	3.60	3.29	7.05	3.08	1.71	11.84	11.00	10.13	10.00
2.56	.57	1.16	Passed	4.29	4.11	5.19	3.77	1.76	10.72	9.00	8.96	8.00
5.65	.51	1.20	Passed	7.36	6.58	4.72	3.55	.97	9.24	9.00	8.27	8.00
5.46	.59	1.36	Passed	7.41	6.58	5.65	2.75	.48	8.88	9.00	8.40	8.00
2.36	.37	1.56	Passed	4.29	4.11	9.06	1.22	.41	10.69	10.50	10.28	10.00
1.55	.37	1.58	Passed	3.50	3.29	8.39	2.86	.64	11.89	11.50	11.25	11.00
1.38	.69	1.61	Passed	3.68	3.30	8.90	1.81	1.43	12.14	—	10.71	10.00
1.36	.63	1.62	Passed	3.61	3.30	8.90	1.97	1.38	12.25	—	10.87	10.00
.27	.70	1.01	Passed	1.98	1.65	9.57	3.56	2.30	15.43	12.00	13.13	12.00
.43	.97	.79	Passed	2.19	1.65	9.50	3.28	1.99	14.77	—	12.78	12.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Beach Soap Co., Lawrence, Mass.				
Beach's Reliance Fertilizer	Lawrence	Yes	620	5.30
" " "	Lawrence		630	
Berkshire Fertilizer Co., Bridgeport, Conn.				
Berkshire Ammoniated Bone Phosphate	Upton	Yes	993	8.16
Berkshire Economical Grass Fertilizer	Swansea	Yes	303	6.42
" " " "	Plainville		371	
" " " "	Plainville		545	
" " " "	N Hadley		710	
Berkshire Grass Special	S. Deerfield	Yes	1269	7.20
Berkshire Market Garden Fertilizer	N Amherst	Yes	168	8.82
" " " "	Acushnet		181	
" " " "	Swansea		309	
" " " "	Seekonk		343	
" " " "	Plainville		544	
Berkshire Market Garden Fertilizer	Sunderland	Yes	139	6.45
Berkshire Potato and Vegetable Phosphate	Swansea	Yes	315	10.38
" " " " "	Upton		992	
Berkshire Potato and Vegetable Phosphate	Holyoke	Yes	590	6.45
Berkshire Root Fertilizer	Sunderland	Yes	109	8.97
" " "	S. Deerfield		134	
" " "	Acushnet		216	
Berkshire Root Fertilizer	Sunderland	Yes	277	6.29
" " "	Plainville		370	
" " "	Bradstreet		412	
Berkshire Tobacco Grower	Sunderland	Yes	264	11.41
" " "	Sunderland		276	
" " "	Hatfield		358	
Berkshire Tobacco Grower	Plainville	Yes	366	10.72
" " "	W. Whately		638	
" " "	N. Hadley		709	
Bowker Fertilizer Co., Boston, Mass.				
Superphosphate with 1% Ammonia	Lawrence	Yes	696	9.16
" " " "	Whitman		813	
Superphosphate with 2% Ammonia	Springfield	Yes	974	10.43
" " " "	Walpole		1114	
Superphosphate with 3% Ammonia	Dighton	Yes	248	10.70
" " " "	N Dighton		291	
" " " "	Westboro		1080	
Superphosphate with 3% Ammonia	Easthampton	Yes	1262	9.50
Stockbridge Cereal Manure without Potash, 1916	Fall River	Yes	165	10.37
" " " " " "	Dighton		227	
" " " " " "	Deerfield		261	
" " " " " "	Sunderland		274	
Stockbridge Cereal Manure without Potash, 1916	Northampton	Yes	447	10.80
" " " " " "	Bridgewater		494	
" " " " " "	Ipswich		503	
" " " " " "	Wellesley		685	
" " " " " "	Attleboro		797	
Tobacco Grower, 1916	Northampton	Yes	446	7.66
The E. D. Chittenden Co., Bridgeport, Conn.				
Complete Tobacco and Onion Fertilizer without Potash	Hatfield	Yes	65	9.01
" " " " " " "	Sunderland		135	
" " " " " " "	Fall River		161	

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Total		Water Soluble	Reverted	Insoluble	Total		Available	
				Found	Guaranteed				Found	Guaranteed	Found	Guaranteed
.28	1.17	1.07	Passed	2.52	2.05	4.97	6.84	3.75	15.56	12.00	11.81	10.00
.13	.03	1.03	Passed	1.31	.80	7.31	2.18	.71	10.20	9.00	9.49	8.00
5.68	1.98	.32	Inferior	7.98	8.00	.57	7.82	.69	9.08	8.00	8.39	4.00
3.28	.29	2.50	Inferior	6.07	5.00	4.72	1.20	.13	6.05	6.00	5.92	5.00
.89	.40	2.45	Passed	3.74	3.30	4.62	4.03	.46	9.11	9.00	8.65	8.00
.31	.79	3.13	Passed	4.23	4.00	4.31	3.91	1.07	9.29	—	8.22	8.00
.92	.40	1.67	Passed	2.99	1.70	5.01	2.77	.77	8.55	9.00	7.78	8.00
.15	.49	1.53	Passed	2.17	1.70	5.17	3.58	1.02	9.77	9.00	8.75	8.00
.33	.48	1.98	Passed	2.79	2.50	3.22	4.94	1.61	9.77	9.00	8.16	8.00
.47	.68	1.86	Passed	3.01	2.50	3.06	5.31	1.89	10.26	9.00	8.37	8.00
1.10	1.74	2.53	Passed	5.37	4.50	1.05	5.54	.15	6.74	6.00	6.59	5.00
.87	1.42	2.62	Passed	4.91	4.50	1.11	5.45	.43	6.99	6.00	6.56	5.00
.63	.26	.34	Passed	1.23	.82	4.75	5.58	1.20	11.53	11.00	10.33	10.00
1.00	.28	.59	Passed	1.87	1.65	5.74	4.61	1.07	11.42	11.00	10.35	10.00
1.65	.50	.71	Passed	2.86	2.47	4.11	6.17	1.43	11.71	11.00	10.28	10.00
.75	.82	1.10	Passed	2.67	2.47	7.40	3.32	1.40	12.12	11.00	10.72	10.00
2.11	.48	1.03	Passed	3.62	3.29	6.22	4.02	1.02	11.26	11.00	10.24	10.00
2.43	.53	.84	Passed	3.80	3.29	5.57	4.54	.94	11.05	11.00	10.11	10.00
1.05	.20	2.88	Passed	4.13	4.11	1.88	3.68	.23	5.79	5.00	5.56	4.00
1.71	.95	1.05	Passed	3.71	3.29	3.42	6.35	3.02	12.79	11.00	9.77	10.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
The E. D. Chittenden Co., —(*Concluded.*)				
Comp. Tobac. and Onion Grower without Potash	Taunton	Yes	390	11.66
Chittenden's Tobacco Special without Potash	Hadley	Yes	287	4.63
Chittenden's Tobacco Special without Potash	East Whately	Yes	1266	4.28
Chittenden's Veg. and Onion Grower without Potash	N. Amherst	Yes	664	10.27
" " " " " " "	Concord		692	
" " " " " " "	Mittineague		975	
" " " " " " "	N. Wilbraham		1056	
Coe-Mortimer Co., 51 Chambers St., New York City.				
E. Frank Coe's Ammoniated Superphos., 1916	Westfield	Yes	740	10.68
" " " " "	Concord		838	
" " " " "	Westford		987	
" " " " "	Lee		1150	
E. Frank Coe's Excelsior Potato Fertilizer	Bedford	Yes	808	13.14
E. Frank Coe's Ideal Tobacco Fert. without Potash	Easthampton	Yes	517	9.33
E. Frank Coe's Original Ammo. Dissolved Phosphate	Middleboro	Yes	1210	9.21
E. Frank Coe's Prolific Crop Producer	Whately	Yes	97	9.82
" " " " "	Sunderland		113	
" " " " "	Plainville		373	
" " " " "	Plainville		539	
" " " " "	Bedford		805	
" " " " "	Concord		837	
E. Frank Coe's Prolific Crop Producer	Westford	Yes	986	10.15
" " " " "	S. Amherst		1172	
E. Frank Coe's XXV Ammoniated Phos., 1916	Manf't'rs Sample	Yes	1243	8.20
Essex Fertilizer Co., 39 N. Market St., Boston, Mass.				
Essex Corn and Vegetable Fertilizer 5-10	Marlboro	Yes	1064	8.34
" " " " " "	E. Woburn		1139	
" " " " " "	W. Woburn		1140	
Essex Grain Grower and Potato Fert. 1-12	Webster	Yes	1012	6.89
" " " " " " "	Jefferson		1079	
" " " " " " "	Three Rivers		1096	
Essex Market Garden and Potato Manure 3½-10	Holyoke	Yes	592	10.03
" " " " " " "	Leominster		827	
" " " " " " "	Webster		1037	
" " " " " " "	Marlboro		1069	
" " " " " " "	Jefferson		1078	
Essex Potato Grower	Easthampton	Yes	591	8.02
" " "	Spencer		1032	
" " "	Webster		1038	
Essex Potato Phosphate for Potatoes and Roots 4-10	Spencer	Yes	1031	10.15
" " " " " " " "	Jefferson		1074	
Essex Special for Potatoes, Grass and Lawn	Leominster	Yes	823	7.11
" " " " " " "	Northboro		1060	
" " " " " " "	Three Rivers		1097	
Essex Tobacco Manure 6-6	Easthampton	Yes	1229	8.40
Essex XXX Fertilizer for All Crops	Easthampton	Yes	593	8.65
" " " " " "	N. Amherst		661	
" " " " " "	Webster		1019	
Essex XXX Fish Fertilizer	Spencer	Yes	1034	8.15
" " " "	Walpole		1141	
John Glennie, Ward Hill, Mass.				
Superphosphate	Ward Hill	Yes	626	8.37

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total					Total		Available	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed
1.97	.79	.78	Passed	3.64	3.29	3.55	6.49	2.92	12.96	11.00	10.04	10.00
3.34	.39	1.07	Passed	4.80	4.52	2.81	.73	.57	4.11	4.00	3.54	3.00
4.23	.20	1.00	Passed	5.43	4.52	2.71	.78	.57	4.06	4.00	3.49	3.00
1.14	1.02	.69	Passed	2.85	2.47	4.69	5.50	2.32	12.51	11.00	10.19	10.00
1.92	.42	.70	Passed	3.04	2.47	5.57	4.64	1.53	11.74	11.00	10.21	10.00
2.52	.77	1.17	Passed	4.46	4.11	5.06	4.95	1.22	11.23	11.00	10.01	10.00
.93	.28	3.52	Passed	4.73	4.53	1.11	3.30	.28	4.69	4.00	4.41	3.00
.92	.35	.83	Passed	2.10	1.65	3.25	7.95	1.02	12.22	11.00	11.20	10.00
1.99	.87	1.05	Passed	3.91	3.29	6.70	3.51	1.22	11.43	11.00	10.21	10.00
2.25	.63	1.08	Passed	3.96	3.29	4.78	5.50	1.51	11.79	11.00	10.28	10.00
.88	.24	.44	Passed	1.56	.82	5.36	5.18	.89	11.43	11.00	10.54	10.00
1.78	1.02	1.52	Passed	4.32	4.10	7.76	2.29	1.12	11.17	11.00	10.05	10.00
.21	.60	.55	Passed	1.36	.82	7.59	4.14	.85	12.58	13.00	11.73	12.00
1.09	.90	1.17	Passed	3.16	2.87	7.25	2.66	1.11	11.02	11.00	9.91	10.00
2.25	1.10	1.25	Passed	4.60	4.10	7.25	3.27	1.16	11.68	11.00	10.52	10.00
1.31	1.03	1.18	Passed	3.52	3.28	7.65	2.44	.80	10.89	11.00	10.09	10.00
3.10	.68	1.30	Passed	5.08	4.92	6.48	1.63	.69	8.80	9.00	8.11	8.00
.52	1.40	2.45	Passed	4.37	4.10	4.40	1.75	.97	7.12	7.00	6.15	6.00
.94	.93	1.09	Passed	2.96	2.46	7.02	3.07	1.16	11.25	11.00	10.09	10.00
.71	.83	1.25	Passed	2.79	2.46	6.86	3.06	1.56	11.48	11.00	9.92	10.00
.42	1.85	1.95	Passed	4.22	3.75	3.16	10.10	6.22	19.48	13.00	13.26	10.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Thomas Hersom & Co., New Bedford, Mass.				
Special Mixture No 1	New Bedford	Yes	178	7.75
Inter. Agr. Corp., Buffalo Fert. Wks. Bch., Buffalo, N. Y.				
Buffalo Ammoniated Phosphate	Easthampton	Yes	1119	12.20
Buffalo Farmers' Choice	Medway	Yes	764	7.67
“ “ “	S. Sudbury		902	
“ “ “	Springfield		979	
Buffalo Farmers' Choice	Easthampton	Yes	1115	9.87
“ “ “	Lee		1148	
Buffalo Garden Truck Fertilizer	Ipswich	Yes	510	13.18
“ “ “ “	Lincoln		1129	
Buffalo New England Special	Ipswich	Yes	511	11.65
“ “ “ “	Medway		774	
“ “ “ “	S. Sudbury		903	
“ “ “ “	Springfield		980	
Buffalo New England Special	Easthampton	Yes	1116	10.64
“ “ “ “	Lincoln		1133	
Buffalo Top Dresser	Taunton	No	396	11.69
“ “ “	N. Hadley		707	
“ “ “	N. Amherst		783	
“ “ “	Springfield		978	
Buffalo Top Dresser	Easthampton	Yes	1117	9.81
Buffalo Vegetable and Potato Fertilizer	Hatfield	Yes	74	11.24
“ “ “ “ “	Taunton		394	
“ “ “ “ “	N Amherst		785	
“ “ “ “ “	Agawam		1041	
Buffa'o Vegetable and Potato Fertilizer	Easthampton	Yes	1118	14.97
“ “ “ “ “	Lee		1146	
Listers Agric. Chemical Works, Newark, N. J.				
Listers Crescent Ammoniated Superphos	Lincoln	Yes	1130	9.06
Listers Excelsior Guano, 1916	Berlin	Yes	928	11.49
Listers Plant Food, 1916	Berlin	Yes	929	9.60
Listers Superior Ammoniated Superphos	S. Deerfield	Yes	130	12.02
Lowell Fertilizer Co., Boston, Mass.				
Lowell Animal Brand 3½–10	Sunderland	Yes	115	9.87
“ “ “ “	S. Deerfield		129	
“ “ “ “	New Bedford		183	
“ “ “ “	Raynham		211	
Lowell Animal Brand 3½–10	Somerset	Yes	316	8.67
“ “ “ “	Norwood		455	
“ “ “ “	Beverly		527	
“ “ “ “	Woburn		802	
Lowell Animal Brand 3½–10	Webster	Yes	1057	10.04
Lowell Bone Fertilizer 2½–10	Somerset	Yes	304	5.79
“ “ “ “	Ipswich		509	
“ “ “ “	Lowell		574	
Lowell Bone Fertilizer 2½–10	Millis	Yes	771	6.94
“ “ “ “	Woburn		803	
“ “ “ “	Fitchburg		938	
Lowell Bone Fertilizer 2½–10	Milford	Yes	1023	5.72
“ “ “ “	Springfield		1049	
“ “ “ “	N. Wilbraham		1053	
Lowell Corn and Vegetable 5–10	Boston	Yes	1327	6.12

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total					Total		Available	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed
3.31	.51	2.09	Passed	5.91	5.00	4.34	8.84	1.51	14.69	12.8	13.18	10.00
1.16	.21	1.04	Passed	2.41	1.20	5.04	5.10	2.03	12.17	13.00	10.14	12.00
.54	.13	.83	Passed	1.50	.80	5.06	5.81	.79	11.66	11.00	10.87	10.00
.73	.06	.62	Passed	1.41	.80	5.74	4.62	2.27	12.63	11.00	10.36	10.00
1.67	.68	1.20	Passed	3.55	3.30	6.51	4.55	.98	12.04	10.00	11.06	9.00
.75	.15	1.12	Passed	2.02	1.60	6.31	4.09	1.28	11.68	11.00	10.40	10.00
.88	.57	.72	Passed	2.17	1.60	5.71	4.34	2.83	12.88	11.00	10.05	10.00
2.88	.39	2.01	Passed	5.28	5.80	4.06	2.91	1.76	8.73	7.00	6.97	6.00
3.42	.47	1.91	Passed	5.80	5.80	3.00	3.28	.99	7.27	7.00	6.28	6.00
1.24	.49	1.04	Passed	2.77	2.50	7.56	3.74	1.53	12.83	11.00	11.30	10.00
1.44	.32	.82	Passed	2.58	2.50	7.02	3.21	1.51	11.74	11.00	10.23	10.00
.86	.45	.61	Passed	1.92	1.65	1.98	8.24	1.29	11.51	11.00	10.22	10.00
1.48	.51	.91	Passed	2.90	2.47	3.51	6.25	1.67	11.43	11.00	9.76	10.00
.58	.16	.56	Passed	1.30	.82	4.66	6.17	1.47	12.30	11.00	10.83	10.00
2.11	.23	1.22	Passed	3.56	3.29	3.80	5.80	1.45	11.05	11.00	9.60	10.00
1.13	.56	1.27	Passed	2.96	2.87	7.14	2.73	.92	10.79	11.00	9.87	10.00
1.16	.58	1.26	Passed	3.00	2.87	7.21	3.06	1.02	11.29	11.00	10.27	10.00
1.08	.69	1.30	Passed	3.07	2.87	7.12	2.87	.98	10.97	11.00	9.99	10.00
.46	1.01	1.01	Passed	2.48	2.05	7.18	2.98	1.40	11.56	11.00	10.16	10.00
.62	.80	1.11	Passed	2.53	2.05	6.57	3.93	1.11	11.61	11.00	10.50	10.00
.56	.98	.90	Passed	2.44	2.05	6.90	3.33	1.02	11.25	11.00	10.23	10.00
2.24	1.20	1.17	Passed	4.61	4.10	7.65	2.16	.87	10.68	11.00	9.81	10.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand	Where Sampled.	Guarantee Substantially Met (?)	Laboratory Number.	Moisture.
Lowell Fertilizer Co.—(*Concluded.*)				
Lowell Corn and Vegetable 5-10	Raynham	Yes	208	7.44
" " " " "	Ipswich		507	
" " " " "	Beverly		528	
Lowel. Empress Brand, Corn, Potatoes and Grain 1½-10	S. Deerfield	Yes	128	7.55
" " " " " " " "	Somerset		308	
" " " " " " " "	Beverly		526	
" " " " " " " "	Lowell		579	
Lowell Empress Brand, Corn, Potatoes and Grain 1½-10	Raynham	Yes	210	7.50
" " " " " " " "	Whitman		733	
" " " " " " " "	N. Grafton		995	
" " " " " " " "	Milford		1029	
Lowell Market Garden Special 6 and 8	Raynham	Yes	217	8.62
" " " " "	Norwood		457	
" " " " "	Lowell		573	
" " " " "	Concord		694	
" " " " "	Woburn		804	
Lowell Market Garden Special 6 and 8	Milford	Yes	966	7.81
" " " " "	West Upton		996	
" " " " "	East Woburn		1135	
" " " " "	West Woburn		1138	
Lowell Potato Manure 3 and 10	New Bedford	Yes	182	8.42
" " " "	Raynham		203	
" " " "	Somerset		305	
Lowell Potato Manure 3 and 10	Norwood	Yes	456	8.80
" " " "	Lowell		580	
" " " "	Whitman		726	
Lowell Potato Manure 3 and 10	Milford	Yes	967	7.67
" " " "	N. Grafton		994	
" " " "	N. Wilbraham		1046	
Lowell Potato Phosphate 4 and 10	Sunderland	Yes	117	9.79
" " " "	Raynham		207	
" " " "	Somerset		302	
" " " "	Lowell		583	
Lowell Potato Phosphate 4 and 10	Concord	Yes	835	9.44
" " " "	N Wilbraham		1045	
" " " "	Springfield		1050	
" " " "	Marlboro		1062	
Lowell Potato and Vegetable 5-10	Attleboro	Yes	798	8.87
" " " " "	Milford		1030	
Lowell Sterling Phosphate 1-12	Webster	Yes	1036	8.79
" " " "	Gt. Barrington		1145	
Lowell Tobacco Grower	Hatfield	Yes	355	6.73
Mapes Formula and Peruvian Guano Co., New York City.				
Mapes Cereal Brand, War Special	Boston	Yes	400	8.8
" " " " "	Conway		885	
" " " " "	Springfield		984	
National Fertilizer Co., 92 State St., Boston, Mass.				
National Nitrogen Phosphate Mixture No 2	Sturbridge	Yes	922	7.7
National Nitrogen Phosphate Mixture No. 3	South Acton	No	909	9.72

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total					Total		Available	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed
2.09	.85	1.40	Passed	4.34	4.10	7.53	2.57	1.31	11.41	11.00	10.10	10.00
.07	1.06	.56	Passed	1.69	1.23	6.16	3.73	1.05	10.94	11.00	9.89	10.00
.08	.99	.61	Passed	1.68	1.23	6.19	3.63	1.15	10.97	11.00	9.82	10.00
2.38	1.04	1.82	Passed	5.24	4.92	6.42	1.93	.83	9.18	9.00	8.35	8.00
2.59	.84	1.88	Passed	5.31	4.32	6.39	2.20	.82	9.41	9.00	8.59	8.00
.96	.88	.99	Passed	2.83	2.46	6.25	3.27	1.28	10.80	11.00	9.52	10.00
.72	.82	1.07	Passed	2.61	2.46	7.05	3.35	.79	11.19	11.00	10.40	10.00
.84	.98	1.14	Passed	2.96	2.46	6.89	2.96	1.59	11.44	11.00	9.85	10.00
1.38	1.24	.94	Passed	3.56	3.29	7.17	2.95	1.01	11.17	11.00	10.12	10.00
2.34	.36	1.10	Passed	3.80	3.20	7.49	2.53	1.33	11.35	11.00	10.02	10.00
2.19	.61	1.41	Passed	4.21	4.10	8.36	2.55	.85	11.76	11.00	10.91	10.00
.33	.39	.38	Inferior	1.10	.82	8.75	3.48	.91	13.14	13.00	12.23	12.00
.49	1.03	2.90	Passed	4.42	4.10	3.19	5.08	.51	8.78	7.00	8.27	6.00
2.23	.29	.68	Passed	3.20	2.47	.56	5.44	3.80	9.80	8.00	6.00	6.00
1.03	.31	.81	Passed	2.15	1.65	3.04	6.82	2.54	12.40	11.00	9.86	10.00
1.36	.22	.68	Passed	2.26	2.47	3.67	5.81	.78	10.26	11.00	9.48	10.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
National Fertilizer Co.—(*Concluded.*)				
National Nitrogen Phosphate Mixture No. 4	Sunderland	Yes	118	9.46
" " " " "	Sunderland		170	
" " " " "	Sunderland		270	
National Nitrogen Phosphate Mixture No. 4	Hatfield	Yes	353	9.71
" " " " "	Bradstreet		411	
" " " " "	Bradstreet		491	
" " " " "	W. Springfield		567	
National Nitrogen Phosphate Mixture No. 4	Hatfield	Yes	64	9.92
National Nitrogen Phosphate Mixture No. 4	Whately	Yes	86	10.02
National Nitrogen Phosphate Mixture No. 4	Sturbridge	Yes	921	9.36
National Nitrogen Phosphate Mixture No. 5	Bradstreet	Yes	493	9.32
" " " " "	N. Hatfield		637	
National Tobacco Special without Potash	S. Deerfield	Yes	138	8.30
" " " " "	Sunderland		269	
" " " " "	Hadley		278	
" " " " "	N. Hadley		650	
National Tobacco Special without Potash	Hatfield	Yes	1273	7.25
New England Fert. Co., 40A N. Market St., Boston, Mass.				
New England Corn Phosphate 2½–10	Brockton	Yes	474	5.99
" " " " "	Bridgewater		602	
" " " " "	N. Hatfield		643	
New England Corn and Grain Fertilizer 1½–10	Bridgewater	Yes	598	6.32
" " " " " " "	Lawrence		621	
New England High Grade Potato Fertilizer 4–10	Brockton	No	481	8.62
" " " " " " "	Bridgewater		609	
New England Potato Fertilizer 3–10	Brockton	Yes	477	7.85
" " " " "	Bridgewater		603	
" " " " "	Natick		671	
New England Potato and Vegetable Manure 5–10	Bridgewater	Yes	606	6.82
New England Special Tobacco Manure 5 – 6	Southwick	Yes	789	7.34
" " " " " "	S. Deerfield		1175	
New England Superphosphate 3½ – 10	Lawrence	Yes	627	9.19
" " " " "	Natick		672	
" " " " "	Southwick		790	
Olds and Whipple, Hartford, Conn.				
O. & W. Special High Grade Tobacco Starter	Sunderland	Yes	488	8.65
" " " " " "	Sunderland		489	
O. & W. Special Onion Fertilizer, less Potash	Hadley	Yes	282	5.79
" " " " " " "	N. Hadley		644	
O. & W. Tobacco Special Fertilizer	Hadley	Yes	281	8.49
" " " "	Hadley		285	
" " " "	Sunderland		485	
Parmenter & Polsey Fertilizer Co., Boston, Mass.				
P. & P. Corn and Grain Fertilizer 1–12	Charlton Depot	Yes	1212	5.85
P. & P. Plymouth Rock 3½ – 10	Sudbury	No	899	8.30
" " " " "	Northfield Farms		1219	
P. & P. Potato Fertilizer 2½ – 10	Peabody	Yes	584	7.12
" " " " "	Northboro		1061	
" " " "	Holden		1071	

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Total		Water Soluble	Reverted	Insoluble	Total		Available	
				Found	Guaranteed				Found	Guaranteed	Found	Guaranteed
2.35	.34	.91	Passed	3.60	3.29	6.06	4.34	1.05	11.45	11.00	10.40	10.00
2.24	.38	.95	Passed	3.57	3.29	6.16	4.07	1.51	11.74	11.00	10.23	10.00
2.52	.34	.72	Passed	3.58	3.29	6.89	3.41	1.33	11.63	11.00	10.30	10.00
2.34	.28	1.00	Passed	3.62	3.20	6.54	4.63	.26	11.43	11.00	11.17	10.00
2.49	.65	.64	Passed	3.78	3.29	5.55	5.18	1.54	12.27	11.00	10.73	10.00
3.10	.38	.97	Passed	4.45	4.11	5.52	3.62	.68	9.82	9.00	9.14	8.00
.96	.18	3.66	Passed	4.80	4.53	1.25	3.22	1.07	5.54	4.00	4.47	3.00
.93	.20	3.42	Passed	4.55	4.53	1.31	2.86	.59	4.76	4.00	4.17	3.00
.63	.51	.99	Passed	2.13	2.06	5.91	4.51	.96	11.38	11.00	10.42	10.00
.15	.65	.51	Passed	1.31	1.23	6.38	3.57	1.15	11.00	11.00	9.95	10.00
1.22	.93	.92	Passed	3.07	3.28	7.05	3.02	.77	10.84	11.00	10.07	10.00
.98	.89	1.01	Passed	2.88	2.46	6.31	3.96	1.03	11.30	11.00	10.27	10.00
1.70	.99	1.55	Passed	4.24	4.10	7.12	3.20	1.26	11.58	11.00	10.32	10.00
.53	1.25	2.54	Passed	4.32	4.10	4.08	3.58	.48	8.14	7.00	7.66	6.00
1.02	.76	1.09	Passed	2.87	2.67	7.50	3.16	.87	11.53	11.00	10.66	10.00
3.14	.72	6.73	Passed	10.59	10.70	1.58	3.10	.37	5.05	—	4.68	3.00
1.59	.42	1.09	Passed	3.10	2.45	1.38	6.58	3.85	11.81	—	7.96	8.00
1.13	.09	3.65	Passed	4.87	4.50	.74	4.80	.40	5.94	—	5.54	5.00
.13	.57	.44	Passed	1.14	.82	6.95	4.70	.40	12.09	13.00	11.69	12.00
.81	1.02	.97	Passed	2.80	2.88	6.83	2.43	1.58	10.84	11.00	9.26	10.00
.67	.69	.91	Passed	2.27	2.05	6.31	3.93	1.06	11.30	11.00	10.24	10.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Parmenter & Polsey Fertilizer Co.,—(*Concluded.*)				
P. & P. Special Potato Fertilizer 5 – 10	Sudbury	Yes	901	4.48
" " " " "	Northboro		1058	
" " " " "	Easthampton		1120	
P. & P. Star Superphosphate 3 –10	Holden	Yes	1070	7.27
Reading Bone Fertilizer Co., Reading, Penn.				
Reading Prize Winner	W. Brookfield	Yes	911	4.20
" " "	Bernardston		1195	
Reading Prize Winner	W. Brookfield	Yes	1256	4.96
" " "	Eastham		1260	
Reading Special Potato and Tobacco Manure	W. Brookfield	Yes	912	4.76
" " " " " "	Bernardston		1194	
" " " " " "	W. Brookfield		1257	
Reading Truck, Fruit, Tree Vine, Potato & Tob. Grower	Harvard	Yes	1214	5.29
" " " " " " " " "	Stow		1254	
" " " " " " " " "	Eastham		1259	
Reading Special Grain and Grass	W. Brookfield	Yes	1255	2.11
Rogers and Hubbard Co., Middletown, Conn.				
Rogers' All Soils—All Crops Phosphate	Deerfield	Yes	145	7.78
" " " " " "	Deerfield		148	
" " " " " "	Plymouth		759	
" " " " " "	Auburn		961	
Rogers' Complete Phosphate	Deerfield	Yes	146	8.32
" " "	Worcester		862	
Rogers' High Grade Oats and Top Dressing	Deerfield	Yes	143	7.01
" " " " " " "	Deerfield		147	
" " " " " " "	Deerfield		257	
" " " " " " "	E. Taunton		297	
" " " " " " "	Hadley		329	
Rogers' High Grade Oats and Top Dressing	Auburn	Yes	962	6.30
Rogers' High Grade Soluble Corn and Onion Manure	Deerfield	Yes	150	10.66
Rogers' High Grade Soluble Tobacco Manure	Deerfield	Yes	151	9.96
Rogers' Potato Phosphate, 1916	Sunderland	Yes	174	9.20
" " " "	Deerfield		258	
" " " "	Deerfield		260	
" " " "	W. Springfield		566	
Hubbard's All Soils—All Crops Phosphate	East Taunton	Yes	294	6.05
Hubbard's Complete Phosphate, 1916	East Taunton	Yes	300	6.49
" " " "	Plymouth		767	
" " " "	W. Brookfield		914	
Hubbard's Bone Base Oats and Top Dressing	Plymouth	Yes	769	6.20
" " " " " " "	Maynard		843	
" " " " " " "	W. Brookfield		935	
Hubbard's Potato Phosphate, 1916	Hadley	Yes	68	9.21
" " " "	E. Taunton		293	
" " " "	Plymouth		755	
" " " "	W. Brookfield		913	
Hubbard's Bone Base Sol. Corn & Gen. Crop Man	E. Taunton	Yes	298	8.92
" " " " " " " "	Hadley		330	
" " " " " " " "	Plymouth		768	
" " " " " " " "	Maynard		844	
Hubbard's Bone Base Sol. Corn & Gen. Crop Man	W. Brookfield	Yes	934	9.06

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total					Total		Available	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed
2.35	.79	1.04	Passed	4.18	4.11	7.88	2.79	1.73	12.40	11.00	10.67	10.00
.67	.90	.98	Passed	2.55	2.46	6.67	3.21	1.35	11.23	11.00	9.88	10.00
1.63	.42	.53	Passed	2.58	2.46	5.04	3.96	1.36	10.36	10.00	9.00	9.00
1.66	.45	.57	Passed	2.68	2.46	5.68	3.38	1.58	10.64	10.00	9.06	9.00
.47	.25	.42	Passed	1.14	.82	5.68	6.35	1.75	13.78	13.00	12.03	12.00
1.71	.90	.63	Passed	3.24	3.29	4.25	4.62	1.90	10.77	9.00	8.87	8.00
.16	.10	.62	Passed	.88	.82	2.14	4.94	1.36	8.44	8.00	7.08	7.00
1.40	.68	1.32	Passed	3.40	3.30	2.87	4.52	1.82	9.21	9.00	7.39	7.00
.25	.43	.48	Passed	1.16	1.00	5.01	3.62	2.98	11.61	11.00	8.63	9.00
4.63	.75	.67	Passed	6.05	6.00	Trace	10.64	2.91	13.55	12.00	10.64	6.00
5.09	.50	.84	Passed	6.43	6.00	Trace	6.63	7.91	14.54	12.00	6.63	6.00
1.50	.34	.78	Passed	2.62	2.50	1.53	8.48	3.33	13.34	12.00	10.01	10.00
2.83	1.00	1.14	Passed	4.97	5.00	Trace	11.01	3.10	14.11	13.00	11.01	10.00
.80	.83	.54	Passed	2.17	2.00	4.57	8.16	3.37	16.10	15.00	12.73	13.00
1.41	.48	1.40	Passed	3.29	3.30	3.25	4.30	1.53	9.08	9.00	7.55	7.00
.40	.38	.52	Passed	1.30	1.00	4.46	3.68	3.27	11.41	11.00	8.14	9.00
5.28	.39	.63	Passed	6.30	6.00	Trace	10.45	2.87	13.32	12.00	10.45	6.00
.79	.70	.56	Passed	2.05	2.00	5.52	7.39	3.29	16.20	15.00	12.91	13.00
1.53	.47	.74	Passed	2.74	2.50	2.04	8.01	3.19	13.24	12.00	10.05	10.00
1.47	.56	.73	Passed	2.76	2.50	2.14	8.35	2.70	13.19	12.00	10.49	10.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Rogers and Hubbard Co.—(*Concluded.*)				
Hubbard's Bone Base Soluble Tobacco Manure	Hadley	Yes	66	11.14
“ “ “ “ “ “	Plymouth		760	
Hubbard's Bone Base Soluble Tobacco Manure	Hadley	Yes	328	9.88
F. S. Royster Guano Co., Baltimore, Md.				
Royster's Curfew Ammoniated Superphosphate	Deerfield	Yes	1178	5.76
“ “ “ “	Westhampton		1230	
Royster's Good Will Ammoniated Superphosphate	Middleboro	Yes	498	8.05
“ “ “ “ “	S. Williamstown		1152	
“ “ “ “ “	Montague		1196	
Royster's Innovation Ammoniated Superphosphate	Westhampton	Yes	1233	5.93
Royster's Penguin Ammoniated Superphosphate	Westfield	Yes	737	8.23
Royster's Valley Tobacco Compound	Westfield	Yes	739	8.26
J. W. Sanborn, Pittsfield, N. H.				
Chemical for Grass and Grain without Potash	Sterling	Yes	1213	6.32
Chemical for Potatoes and Corn	Millbury	Yes	1072	6.93
Sanderson Fert. and Chemical Co., New Haven, Conn.				
High Grade Ammoniated Phosphate	Raynham	Yes	320	9.37
“ “ “ “	Southwick		435	
Sanderson's Double Strength Ammonia Mixture	Taunton	Yes	321	10.15
Sanderson's Phosphate without Potash, 1916	E. Taunton	Yes	599	10.93
Sanderson's Special without Potash	E. Taunton	Yes	209	10.28
“ “ “ “	Taunton		319	
“ “ “ “	E. Taunton		608	
Sanderson's Top Dressing Grass and Grain, 1916	Taunton	Yes	289	13.23
“ “ “ “ “ “ “	E. Taunton		623	
M. L. Shoemaker & Co. Ltd., Philadelphia, Pa.				
Swift-Sure Superphosphate for Tobacco	Sunderland	Yes	169	10.15
“ “ “ “ “	Sunderland		173	
“ “ “ “ “	Deerfield		259	
“ “ “ “ “	Whately		880	
“ “ “ “ “	Conway		889	
Springfield Rendering Co., Springfield, Mass.				
Animal Fertilizer for All Crops	W. Springfield	Yes	570	5.97
“ “ “ “ “	Springfield		973	
“ “ “ “ “	E. Longmeadow		1040	
High Grade Dressing for Grass and Forcing	Springfield	Yes	969	4.10
“ “ “ “ “ “ “	E. Longmeadow		1039	
Special Potato and Vegetable Fertilizer	Springfield	Yes	970	4.33
20th Century Specialty Co., Boston, Mass.				
Scientific 12L Fertilizer	Dorchester	Yes	1136	.72
Whitman and Pratt Rendering Co., Boston, Mass.				
Whitman and Pratt's 5 - 10	Billerica	Yes	576	7.42
“ “ “ “	Concord		836	
Whitman and Pratt's 3 - 10	Lowell	Yes	588	8.43
“ “ “ “	Billerica		604	
Whitman and Pratt's 2½ - 10	Billerica	Yes	614	8.38
Wilcox Fertilizer Co., Mystic, Conn.				
Wilcox Complete Bone Phosphate	Monson	Yes	1200	7.42
Wilcox Corn Special	Fall River	Yes	163	9.02
“ “ “	New Bedford		205	
“ “ “	Amherst		747	
Wilcox Grass Fertilizer	New Bedford	Yes	204	10.10
“ “ “	Three Rivers		1094	
Wilcox Special Superphosphate	Three Rivers	Yes	1093	9.10
“ “ “	Montague		1160	
Worcester Rendering Co., Worcester, Mass.				
Royal Worcester Corn and Grain Fertilizer	Worcester	Yes	964	8.22
Royal Worcester Potato Fertilizer	Worcester	Yes	956	7.26

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total					Total		Available	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed
2.72	1.03	1.27	Passed	5.02	5.00	.32	10.94	3.51	14.77	13.00	11.26	10.00
3.31	.73	1.16	Passed	5.20	5.00	Trace	10.53	2.86	13.39	13.00	10.53	10.00
1.74	.23	1.43	Passed	3.40	3.29	5.23	3.24	.97	9.44	8.50	8.47	8.00
1.59	.69	1.64	Passed	3.92	4.11	6.51	1.89	1.45	9.85	8.50	8.40	8.00
2.14	.28	1.93	Passed	4.35	2.47	4.68	3.94	.74	9.36	6.50	8.62	6.00
.82	.18	.73	Passed	1.73	1.65	8.00	4.18	.68	12.86	10.50	12.18	10.00
.68	.42	2.83	Passed	3.93	4.11	4.15	2.35	.26	6.76	6.50	6.50	6.00
.61	1.17	3.04	Passed	4.82	4.94	.28	7.11	3.78	11.17	9.00	7.39	7.00
.49	.81	2.04	Passed	3.34	3.29	3.89	4.79	2.88	11.56	9.00	8.68	8.00
1.36	.73	1.28	Passed	3.37	3.29	3.42	6.61	2.39	12.42	11.00	10.03	10.00
5.53	.11	1.36	Passed	7.00	6.58	7.05	2.13	.41	9.59	9.00	9.18	8.00
.46	.71	1.03	Passed	2.20	1.65	3.00	7.65	1.42	12.07	11.00	10.65	10.00
.88	.65	1.22	Passed	2.75	2.47	3.92	6.89	1.61	12.42	11.00	10.81	10.00
1.88	1.08	1.43	Passed	4.39	4.11	3.79	5.49	1.08	10.36	9.00	9.28	8.00
1.03	1.57	1.50	Passed	4.10	3.23	5.36	4.19	3.21	12.76	12.00	9.55	9.00
.98	.80	.93	Passed	2.71	2.46	6.67	4.32	2.35	13.34	11.00	10.99	10.00
2.82	1.12	1.44	Passed	5.38	4.93	4.85	4.20	1.72	10.77	9.00	9.05	8.00
1.63	1.02	1.13	Passed	3.78	3.28	6.44	4.80	2.79	14.03	11.00	11.24	10.00
1.24	—	.14	Passed	1.38	1.00	1.63	.59	.18	2.40	2.00	2.22	1.90
2.26	.74	1.20	Passed	4.20	4.10	8.33	1.93	1.45	11.71	11.00	10.26	10.00
.68	1.04	.95	Passed	2.67	2.46	7.31	2.53	2.07	11.91	11.00	9.84	10.00
.45	.72	.93	Passed	2.10	2.05	7.33	2.99	1.19	11.51	11.00	10.32	10.00
.46	.41	1.06	Passed	1.93	1.65	4.31	7.07	4.97	16.35	13.00	11.38	12.00
.87	.57	2.12	Passed	3.56	3.30	4.76	4.19	3.32	12.27	11.00	8.95	10.00
1.81	.36	1.98	Passed	4.15	4.12	5.46	3.21	1.56	10.23	9.00	8.67	8.00
.42	.09	1.26	Passed	1.77	1.23	5.59	3.98	5.41	14.98	11.00	9.57	10.00
.94	.91	.70	Passed	2.55	2.05	4.44	13.39	.69	18.52	11.00	17.83	10.00
1.68	1.29	1.17	Passed	4.14	3.24	3.95	6.45	4.63	15.03	11.00	10.40	10.00

Wood Ashes and Ground Rock.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Andrews and Spelman Co., Providence, R. I.				
Wood Ashes	Fall River	Yes	157	15.48
Joseph Breck & Sons Corporation, Boston, Mass.				
High Grade Wood Ashes	Boston	Yes	1270	.71
T. H. Frauley, Newport, R. I.				
Unleached Hardwood Ashes	Taunton	Yes	223	5.45
" " "	Dighton		229	
Unleached Hardwood Ashes	Shirley	Yes	1323	7.72
R. & J. Farquhar & Co., Boston, Mass.				
Pure Canadian Unleached Hardwood Ashes	Boston	Yes	417	8.05
John Joynt, Lucknow, Ontario, Canada.				
Joynt Brand Unleached Hardwood Ashes	Hadley	Yes	8	26.10
Joynt Brand Unleached Hardwood Ashes	Deerfield	No	14	31.08
Joynt Brand Unleached Hardwood Ashes	Deerfield	Yes	15	15.45
Joynt Brand Unleached Hardwood Ashes	Sunderland	No	18	39.31
Joynt Brand Unleached Hardwood Ashes	Sunderland	No	268	38.80
Joynt Brand Unleached Hardwood Ashes	Amherst	No	898	33.96
Joynt Brand Unleached Hardwood Ashes	S. Deerfield	No	1228	25.07
Joynt Brand Unleached Hardwood Ashes	Boston	No	1249	.68
Joynt Brand Unleached Hardwood Ashes	Sunderland	No	1276	28.05
Joynt Brand Unleached Hardwood Ashes	Sunderland	Yes	1278	25.37
Joynt Brand Unleached Hardwood Ashes	Bradstreet	No	1279	23.83
Joynt Brand Unleached Hardwood Ashes	Bradstreet	No	1280	28.26
Joynt Brand Unleached Hardwood Ashes	Bradstreet	Yes	1281	24.59
Joynt Brand Unleached Hardwood Ashes	Sunderland	No	1283	29.34
Joynt Brand Unleached Hardwood Ashes	Sunderland	No	1284	27.91
Joynt Brand Unleached Hardwood Ashes	S. Deerfield	Yes	1287	27.52
Joynt Brand Unleached Hardwood Ashes	Sunderland	Yes	1288	27.50
Joynt Brand Unleached Hardwood Ashes	Sunderland	No	1293	28.32
Joynt Brand Unleached Hardwood Ashes	Sunderland	No	1294	28.00
Joynt Brand Unleached Hardwood Ashes	Sunderland	No	1295	29.09
Joynt Brand Unleached Hardwood Ashes	Deerfield	No	1296	39.81
Joynt Brand Unleached Hardwood Ashes	Granby	No	1299	2.60
Joynt Brand Unleached Hardwood Ashes	Sunderland	Yes	1343	25.96
Joynt Brand Unleached Hardwood Ashes	Sunderland	Yes	1344	25.28
F. R. Lalor, Dunnville, Ontario, Canada.				
Lalor Brand Hardwood Ashes	East Hadley	Yes	27	27.55
Lalor Brand Hardwood Ashes	East Hadley	Yes	28	27.69
W. L. Mitchell, New Haven, Conn.				
Mitchell Brand Wood Ashes	S. Deerfield	No	9	27.77
Mitchell Brand Wood Ashes	S. Deerfield	Yes	1165	7.04
Mitchell Brand Wood Ashes	S. Deerfield	Yes	1290	2.13
Mitchell Brand Wood Ashes	S. Deerfield	No	1291	2.37
Mitchell Brand Wood Ashes	S. Deerfield	No	1292	28.19
Ross Bros. Co., Worcester, Mass.				
Wood Ashes	Leominster	Yes	1340	24.36
Vermont Marl Co., Brattleboro, Vt.				
Hardwood Ashes	Sunderland	Yes	272	16.00
GROUND ROCK				
Nature's Plant Food Co., Boston, Mass.				
Nature's Plant Food	Boston	Yes	560	.19
Nature's Plant Food	Boston	Yes	1301	.60

Wood Ashes and Ground Rock.

Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.		Acid Soluble Potash	Calcium Oxide (Ca O) in 100 lbs.	Insoluble or Earthy Matter
			Total		Available						
Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed			
	—	—	1.33	1.00	—	—	4.39	2.00	4.78	32.72	8.34
—	—	—	1.49	1.00	—	—	7.27	7.00	7.84	42.28	2.43
—	—	—	2.79	2.00	—	—	6.62	5.00	7.68	30.50	16.46
—	—	—	2.60	2.00	—	—	6.05	5.00	7 63	29.96	15.97
—	—	—	1.84	1.00	—	—	4.11	3.00	5.31	38.20	12.03
—	—	—	1.38	1.00	—	—	3.09	3.00	3.56	27.59	9.53
—	—	—	1.13	1.00	—	—	2.54	3.00	3.18	27.31	10.01
—	—	—	1.30	1.00	—	—	4.00	3.00	4.89	35.26	13.02
—	—	—	.63	1.00	—	—	90	3.00	1.19	27.00	11.20
—	—	—	1.02	1.00	—	—	1.66	3.00	2.21	24.69	12.90
—	—	—	1.14	1.00	—	—	.54	3.00	1.03	25.34	16.69
—	—	—	.88	1.00	—	—	2.76	3.00	3.82	30.44	14.29
—	—	—	.84	1.00	—	—	.47	3 00	1 45	29.30	
—	—	—	1.61	1.00	—	—	1.60	3.00	2.22	28.54	11.84
—	—	—	1.12	1.00	—	—	3.14	3.00	4.77	24.67	14.48
—	—	—	1.05	1.00	—	—	1.65	3.00	3.10	25.94	16.07
—	—	—	1.20	1.00	—	—	1.90	3.00	2.89	30.19	9 73
—	—	—	1.20	1.00	—	—	3.36	3.00	4.60	26.42	12.44
—	—	—	1.23	1.00	—	—	2.51	3.00	3.80	24.90	12.49
—	—	—	.85	1.00	—	—	1.49	3.00	2.34	31.33	12.02
—	—	—	1.27	1.00	—	—	2.97	3.00	3 85	30.40	7.15
—	—	—	1.33	1.00	—	—	3.08	3.00	5.09	27.66	9.31
—	—	—	.85	1.00	—	—	1.42	3.00	2.10	31.52	14.61
—	—	—	1.26	1.00	—	—	1.44	3.00	2.37	22.85	19.97
—	—	—	.93	1.00	—	—	1.28	3.00	2.59	28.58	15.18
—	—	—	1.35	1.00	—	—	1.76	3.00	2.36	23.26	6.07
—	—	—	1.60	1.00	—	—	1.84	3.00	2.64	30.51	27.39
—	—	—	1.36	1.00	—	—	3.80	3.00	4.61	29.94	6.95
—	—	—	1.51	1.00	—	—	3.16	3.00	3.77	28.38	12.23
—	—	—	1.01	1.00	—	—	3.06	3.00	3.53	28.49	9.60
—	—	—	1.48	1.00	—	—	3.66	3.00	4.44	24.04	13.28
—	—	—	1.31	1.00	—	—	1.44	4.00	1.80	28.01	10.81
—	—	—	2.08	1.50	—	—	5.24	3.00	6.66	35.11	10.38
—	—	—	1.86	1.50	—	—	2.94	3.00	4.25	36.42	17.66
—	—	—	1.56	1.50	—	—	1.90	3.00	3.83	36 25	19.00
—	—	—	1.33	1.50	—	—	2.13	3.00	3.20	25.94	14.90
—	—	—	.94	1.00	—	—	—	—	5.24	29.68	4 48
—	—	—	1.51	1.00	—	—	3.19	3.00	4.16	29.78	19.73
—	—	—	.23	.23	—	—	—	Trace	.14	—	—
—	—	.13	.13	.23	—	—	.17	Trace	.35	—	—

Fertilizers for Private Use, Officially Collected But Not Registered.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
COMPLETE FERTILIZERS.				
Baltimore Pulverizing Co., Baltimore, Md.				
Corn and Grain Fertilizer	Myricks	Yes	312	7.35
Market Garden Fertilizer	Myricks	Yes	314	7.62
Perfect Potato Fertilizer	Myricks	Yes	311	6.20
Special Strawberry Compound	Myricks	Yes	313	6.37
Berkshire Fertilizer Co., Bridgeport, Conn.				
Special Mixture	Sunderland	Yes	114	8.22
F. D. Hubbard, Sunderland, Mass.				
Home Mixture Tobacco Starter	Sunderland	—	1325	8.85
Home Mixture Onion Fertilizer	Sunderland	—	1326	10.50
H. C. Marsh, Bradstreet, Mass.				
Home Mixture	Bradstreet	—	1317	9.90
Mitchell Fertilizer Co., Tremley, N. J.				
Special Fertilizer, 1916	Seekonk	Yes	341	8.91
National Fertilizer Co., Boston, Mass.				
National Tobacco Special, 1915	Hadley	Yes	1328	7.42
National Universal Fertilizer, 1916	Montague	Yes	1162	10.40
Rogers and Hubbard Co., Middletown, Conn.				
Pellissier Tobacco Special Mixture	Hadley	Yes	76	11.34
H. C. Russell, North Hadley, Mass.				
Home Mixture	N. Hadley	—	1339	10.56
AMMONIATED SUPERPHOSPHATES.				
Berkshire Fertilizer Co., Bridgeport, Conn.				
Special 10 – 8 Mixture	Plainville	Yes	541	13.33
" " "	Plainville		547	
Thomas Hersom & Co., New Berdfod, Mass.				
Special Mixture No. 3	New Bedford	Yes	201	8.90
Olds and Whipple, Hartford, Conn.				
Special Grass Fertilizer, less Potash	Sunderland	Yes	487	6.29
O. & W. Home Mixture No. 1	Hadley	Yes	283	7.84
O. & W. Home Mixture No. 2	Hadley	Yes	284	7.85
Benjamin Randall, Rockport, Mass.				
Randall's Market Garden Fertilizer	S. Deerfield	Yes	1168	12.72
Rogers and Hubbard Co., Middletown, Conn.				
Pellisier Special Mixture Tobacco Starter	Hadley	—	63	7.00
Wunsch Manufacturing Co., Pawtucket, R. I.				
Superior Brand Fertilizer	Seekonk	Yes	347	8.34
Superior Brand Fertilizer	Seekonk	No	1318	10.72
WOOD ASHES.				
F. T. Haynes, Sturbridge, Mass.				
Wood Ashes	Sturbridge	—	919	1.31
Geo. L. Munroe & Sons, Oswego, N. Y.				
Wood Ashes	Sunderland	—	1277	7.21
Wood Ashes	S. Deerfield	—	1285	21.16
Wood Ashes	S. Deerfield	—	1286	27.62
Wood Ashes	S. Deerfield	—	1289	2.84
Chas. Stevens, Napanee, Canada.				
Hardwood Ashes	Southwick	Yes	440	13.67
Wood Ash Fertilizer	Southwick	—	1324	2.85
Washburn Haywood Chair Factory, Erving, Mass.				
Wood Ashes	Northfield	—	1316	.50

Fertilizers for Private Use, Officially Collected But Not Registered.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total					Total		Available			
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed
.11	.41	1.08	Inferior	1.60	1.65	2.23	7.47	2.04	11.74	—	9.70	8.00	1.16	1.00
.10	.45	2.29	Passed	2.84	2.47	3.35	4.69	1.25	9.29	—	8.04	8.00	1.20	1.00
.14	.67	2.39	Passed	3.20	3.29	3.80	4.30	1.65	9.75	—	8.10	8.00	1.30	1.00
.16	.28	2.72	Passed	3.16	3.29	2.17	3.45	.99	6.61	—	5.62	5.00	1.18	1.00
1.77	1.58	1.94	Passed	5.29	4.12	3.64	7.00	2.73	13.37	12.00	10.64	10.00	.21	—
—	—	—	—	5.74	—	—	9.64	2.55	12.19	—	9.64	—	.27	—
—	—	—	—	5.87	—	.48	7.89	4.36	12.73	—	8.37	—	.41	—
—	—	—	—	4.26	—	2.10	5.87	.59	8.56	—	7.97	—	.75	—
2.28	.92	1.71	Passed	4.91	4.11	5.23	3.60	1.81	10.64	9.00	8.83	8.00	1.00	1.00
.96	—	—	—	5.03	4.50	.51	4.36	.33	5.20	4.00	4.87	3.00	3.02	3.00
.58	.38	.34	Passed	1.30	.82	3.95	6.55	.73	11.23	9.00	10.50	8.00	1.06	1.00
.61	.61	3.50	Passed	4.72	4.50	.32	8.56	6.17	15.05	12.00	8.88	—	.50	—
—	—	—	—	6.36	—	2.30	2.70	.23	5.23	—	5.00	—	1.55	—
5.05	.09	3.97	Passed	9.11	8.23	3.19	5.47	.09	8.75	—	8.66	8.00	—	—
1.79	.59	1.89	Passed	4.27	3.50	6.31	5.45	4.29	16.05	14.00	11.76	10.00	.47	—
2.09	.71	2.48	Passed	5.28	4.95	.32	5.48	2.16	7.96	—	5.80	4.00	—	—
1.67	.21	4.78	Passed	6.66	6.60	2.40	2.74	.37	5.51	5.25	5.14	—	—	—
1.18	.91	3.72	Passed	5.81	5.25	3.32	8.84	1.98	14.14	11.50	12.16	—	—	—
1.03	.67	2.60	Passed	4.30	3.00	2.74	6.16	3.04	11.94	—	8.90	8.00	—	—
5.44	.66	4.92	Passed	11.02	—	.87	3.44	.51	4.82	—	4.31	—	—	—
1.48	.61	1.39	Passed	3.48	3.28	1.91	5.87	2.88	10.66	10.00	7.78	8.00	—	—
1.11	.87	1.30	Passed	3.28	3.30	3.89	3.58	.71	8.18	10.00	7.47	8.00	—	—
											Calcium Oxide	Total Potash		
—	—	—	—	—	—	—	—	—	2.27	—	36.84	7.58	6.78	—
—	—	—	—	—	—	—	—	—	1.51	—	20.81	4.08	2.61	—
—	—	—	—	—	—	—	—	—	1.38	—	25.52	4.70	3.20	—
—	—	—	—	—	—	—	—	—	1.13	—	21.16	3.33	1.58	—
—	—	—	—	—	—	—	—	—	1.02	—	28.13	4.03	3.29	—
—	—	—	—	—	—	—	—	—	1.29	—	19.00	3.76	3.02	3.00
—	—	—	—	—	—	—	—	—	1.81	—	39.26	5.36	4.67	—
—	—	—	—	—	—	—	—	—	2.07		49.41	4.71	3.34	—

Fertilizers for Private Use, Officially Collected But Not Registered.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
BONE, TANKAGE AND DRY GROUND FISH.				
Essex Fertilizer Co., Boston, Mass.				
Essex Ground Bone	Leominster	Yes	824*	5.56
Benjamin Randall, Rockport, Mass.				
Randall's Ground Bone	S. Deerfield	Yes	1167*	13.62
Ayer Rendering Co., Ayer, Mass.				
Tankage	Ayer	—	1321	14.90
Boston Development and Sanitary Co., Boston, Mass.				
Garbage Tankage	Southwick	No	441†	4.28
Garbage Tankage	Southwick	No	442†	5.82
Garbage Tankage	Southwick	No	443†	5.00
Springfield Reduction Co., Springfield, Mass.				
Garbage Tankage	Southwick	No	444†	5.47
Benjamin Randall, Rockport, Mass.				
Acidulated Fish	S. Deerfield	—	1169	16.10
Rogers and Hubbard Co., Middletown, Conn.				
Fish Scrap	Hadley	—	69a	10.36
NITROGEN COMPOUNDS.				
Baltimore Pulverizing Co., Baltimore, Md.				
Nitrate of Soda	Myricks	—	310	2.45
Coe-Mortimer Co., New York City.				
Sulfate of Ammonia	Amherst	—	1304	1.08
Calcium Cyanamid	Amherst	—	1302	1.13
Dried Blood	Amherst	—	1305	12.71
American Cyanamid Co., New York City.				
Calcium Cyanamid	Titicut	Yes	122	1.38
Parmenter and Polsey Fertilizer Co., Boston, Mass.				
Blood Meal	Hadley	Yes	331	10.69
Berkshire Fertilizer Co., Bridgeport, Conn.				
Castor Pomace	Plainville	Yes	543	10.07
W. Newton Smith, Baltimore, Md.				
Baltimore Brand Cottonseed Meal	Conway	No	883	7.69
PHOSPHORIC ACID COMPOUNDS.				
American Agricultural Chemical Co., Boston, Mass.				
Dissolved Bone Black	Amherst	—	1310	10.86
Berkshire Fertilizer Co., Bridgeport, Conn.				
Precipitated Phosphate	Sunderland	Yes	711	17.88
" "	N. Hadley		712	
Mapes Formula and Peruvian Guano Co., New York City.				
Mapes' Dissolved Bone	Amherst	—	1309	9.46

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*824 Mechanical Analysis: fine 62.91%, coarse 37.09%.
1167 " " " 63.63%, " 36.37%.

Fertilizers for Private Use, Officially Collected But Not Registered.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total					Total		Available	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed
.12	.41	2.25	Passed	2.78	2.46	—	—	—	26.56	20.00	—	—
.31	1.14	1.66	Passed	3.11	3.00	—	—	—	22.39	20.00	—	—
—	—	—	—	8.63	—	—	—	—	6.52	—	—	—
.14	.24	2.07	Inferior	2.45	3.30	—	.90	2.17	3.07	3.50	.90	—
.12	.34	2.12	Inferior	2.58	3.30	—	1.51	1.63	3.14	3.50	1.51	—
.11	.32	1.98	Inferior	2.41	3.30	—	1.57	1.43	3.00	3.50	1.57	—
.13	.23	2.57	Inferior	2.93	3.30	—	2.01	1.94	3.95	3.50	2.01	—
1.89	1.48	3.55	Passed	6.92	—	2.84	6.99	.59	10.42	—	9.83	—
.38	2.78	4.59	Passed	7.75	—	—	5.58	.63	6.21	—	5.58	
12.54	—	—	—	12.54b	—	—	—	—	—	—	—	—
21.44	—	—	—	21.44	—	—	—	—	—	—	—	—
—	18.80	.90	Passed	19.70	—	—	—	—	—	—	—	—
.68	—	10.30	Passed	10.86	—	—	—	—	1.38	—	—	—
—	16.47	1.01	Passed	17.48	17.32	—	—	—	—	—	—	—
.24	.04	13.37	Passed	13.65	13.00	—	—	—	.43	—	—	—
—	—	—	—	5.01	4.94	—	—	—	—	—	—	—
—	—	—	—	6.02	6.17	—	—	—	—	—	—	—
—	—	—	—	—	—	7.40	9.45	.08	16.93	—	16.85	—
—	—	—	—	—	—	4.95	16.97	1.81	23.73	—	21.92	22.00
.22	.76	1.49	Passed	2.47	—	5.55	13.79	1.81	21.15	—	19.34	—

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†441 Potash Found .35%, guaranteed 1.5%.
442 " " .37%, " 1.5%.
443 " " .29%, " 1.5%.
444 " " .41%, " 1.5%.
a. 69. Fat 16.25% which is very high for fertilizer fish.
b. 310. A low grade product containing 21.46% common salt.

Ground Bone.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
American Agricultural Chemical Co., Boston, Mass.				
Fine Ground Bone	Whitman	Yes	480	5.57
" " "	Billerica		578	
" " "	Amherst		753	
Fine Ground Bone	Pepperell	Yes	867	7.50
" " "	Sturbridge		916	
" " "	Marlboro		1059	
Farquhar's Fine Ground Bone	Boston	Yes	428	6.50
Armour Fertilizer Works, Baltimore, Md.				
Armour's Bone Meal	Plainville	Yes	800	4.01
Baugh and Sons Co., Philadelphia, Pa.				
Fine Ground Bone	Dighton	Yes	219	6.89
" " "	Marblehead		534	
Raw Bone Meal	Dighton	No	218	8.04
" " "	N. Dighton		339	
Beach Soap Co., Lawrence, Mass.				
Fertilizer Bone	Lawrence	Yes	634	8.95
Bowker Fertilizer Co., Boston, Mass.				
Bowker's Fresh Ground Bone	Framingham	Yes	670	10 32
" " " "	Whitman		731	
" " " "	Milford		1025	
Coe-Mortimer Co., New York City.				
Fine Ground Bone 3 – 50	Bridgewater	Yes	1211	9.15
" " " "	Mt. Hermon		1221	
Bone Meal	Amherst	Yes	1308	5.12
John C. Dow & Co., Boston, Mass.				
Dow's Pure Ground Bone	Framingham	Yes	673	8.40
" " " "	Concord		699	
" " " "	Concord		703	
" " " "	Leominster		833	
Dow's Pure Ground Bone	Fitchburg	Yes	940	3.62
Thomas Hersom & Co., New Bedford, Mass.				
Pure Bone Meal	New Bedford	Yes	200	3.71
A. W. Higgins, Westfield, Mass.				
High Grade Ground Bone	Whately	Yes	30	12.94
High Grade Ground Bone	Hatfield	Yes	31	10.97
Higgins' Bone Flour	N. Amherst	Yes	84	9.08
" " "	Whately		92	
" " "	Whately		95	
" " "	N. Amherst		98	
" " "	N. Amherst		100	
" " "	Hadley		324	
" " "	Hatfield		351	
Home Soap Co., Worcester, Mass.				
Pure Ground Bone	Westboro	Yes	1082	6.40
International Agric. Corp., (Buffalo Fert. Works, Branch), Buffalo, N. Y.				
Buffalo Bone Meal	Northampton	Yes	142	4.85
" " "	N. Attleboro		777	
Listers Agricultural Chemical Works, Newark, N. J.				
Listers Bone Meal	Manf't'rs Sample	Yes	1251	8.12

Ground Bone.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Mechanical Analysis	
				Total					Total		Available			
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Fine Bone	Coarse Bone
.26	.42	2.39	Passed	3.07	2.47	—	—	—	23.93	22.88	—	—	61.76	38.24
.39	.73	1.73	Passed	2.85	2.47	—	—	—	24.54	22.88	—	—	56.05	43.95
.21	.66	1.74	Passed	2.61	2.47	—	—	—	25.10	22.88	—	—	68.30	31.70
.12	.34	2.29	Passed	2.75	2.47	—	—	—	22.22	22.00	—	—	56.32	43.68
.21	.28	2.25	Passed	2.74	2.47	—	—	—	17.81	16.49	—	—	53.39	46.61
.23	.16	3.15	Passed	3.54	3.70	—	—	—	21.23	21.50	—	—	55.35	44.65
.47	1.06	1.41	Passed	2.94	2.26	—	—	—	25.70	20.00	—	—	55.30	44.70
.42	.53	1.76	Passed	2.71	2.40	—	—	—	23.98	22.88	—	—	56.01	43.99
.41	.31	2.17	Passed	2.99	2.47	—	—	—	23.98	22.88	—	—	53.65	46.35
.37	.46	2.24	Passed	3.07	2.47	—	—	—	23.42	22.88	—	—	58.95	41.05
.13	.50	1.05	Passed	1.68	2.00	—	—	—	27.88	24.00	—	—	66.14	33.86
.14	.35	1.24	Passed	1.73	2.00	—	—	—	28.91	24.00	—	—	59.71	40.29
.20	1.12	1.00	Passed	2.32	2.00	—	—	—	27.02	24.00	—	—	76.06	23.94
.07	.18	.69	Passed	.94	.82	—	—	—	30.64	29.00	—	—	71.76	28.24
.08	.24	.67	Passed	.99	.82	—	—	—	31.38	29.00	—	—	80.78	19.22
.10	.34	.57	Passed	1.01	.60	—	—	—	32.15	30.00	—	—	90.23	9.77
.18	.40	2.72	Passed	3.30	2.00	—	—	—	25.44	26.00	—	—	41.79	58.21
.57	.45	1.88	Passed	2.90	2.40	—	—	—	20.15	22.00	—	—	43.26	56.74
.52	.44	1.90	Passed	2.86	2.47	—	—	—	24.42	23.00	—	—	54.82	45.18

Ground Bone and Tankage.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
Lowell Fertilizer Co., Boston, Mass.				
Lowell Ground Bone	Fall River	Yes	189	3.69
" " "	Dighton		226	
" " "	Fall River		301	
" " "	Bridgewater		496	
Lowell Ground Bone	Lowell	Yes	575	4.20
" " "	Lowell		589	
" " "	Worcester		860	
" " "	Webster		1022	
Geo. E. Marsh Co., Lynn, Mass.				
Pure Ground Bone Meal	Natick	Yes	680	6.97
Nitrate Agencies Co., New York City.				
Ground Bone	New Bedford	Yes	184	6.49
New England Dressed Meat and Wool Co., Boston, Mass.				
Bone Fertilizer	Somerville	Yes	763	6.33
Bone Fertilizer	S. Amherst	Yes	1300	4.82
Carroll S. Page, Hyde Park, Vt.				
Raw Ground Bone	Westford	Yes	989	2.18
Rogers and Hubbard Co. Middletown, Conn.				
Rogers' Strictly Pure Fine Bone	Deerfield	Yes	144	6.52
Rogers' Pure Raw Knuckle Bone Flour	Fitchburg	Yes	1246	7.87
Hubbard's Pure Raw Knuckle Bone Flour	Fitchburg	Yes	939	8.03
" " " " " "	E. Milton		1215	
Hubbard's Pure Raw Knuckle Bone Flour	Amherst	Yes	1313	9.22
Hubbard's Strictly Pure Fine Bone	Taunton	Yes	231	10.17
" " " " "	Deerfield		757	
" " " " "	Fitchburg		947	
" " " " "	Framingham		1021	
F. S. Royster Guano Co., Baltimore, Md.				
Royster's Fine Ground Bone	S. Williamstown	Yes	1155	5.37
" " " "	Deerfield		1180	
M. L. Shoemaker Co. Ltd., Philadelphia, Pa.				
Swift-Sure Bone Meal	Sunderland	Yes	172	3.57
" " " "	Conway		887	
Springfield Rendering Co., Springfield, Mass.				
Ground Bone	Springfield	Yes	972	2.67
Bone Meal	Springfield	Yes	1297	5.83
Whitman and Pratt Rendering Co., Boston, Mass.				
Pure Ground Bone	Wellesley	Yes	688	4.11
" " "	Woburn		811	
Wilcox Fertilizer Works, Mystic, Conn.				
Wilcox Pure Ground Bone	Amherst	Yes	754	4.49
S. Winter Co., Brockton, Mass.				
Pure Ground Bone	Brockton	Yes	1142	5.86
Worcester Rendering Co., Worcester, Mass.				
Royal Worcester Ground Steamed Bone	Framingham	Yes	676	3.14
" " " " "	Worcester		952	
TANKAGES.				
American Agricultural Chemical Co., Boston, Mass.				
9% Ground Tankage	Boston	Yes	469	7.05
" " "	Sturbridge		918	
6% Ground Tankage	Boston	Yes	468	7.84
" " "	Concord		702	

Ground Bone and Tankage.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Mechanical Analysis	
				Total					Total		Available			
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Fine Bone	Coarse Bone
.08	1.28	1.34	Passed	2.70	2.46	—	—	—	26.61	20.00	—	—	76.32	23.68
.13	.79	1.58	Passed	2.50	2.46	—	—	—	27.22	20.00	—	—	61.87	38.13
.15	.26	4.06	Passed	4.47	2.48	—	—	—	23.13	28.00	—	—	14.19	85.81
.16	.03	2.29	Passed	2.48	2.46	—	—	—	23.50	22.88	—	—	67.72	32.28
.07	.64	2.70	Passed	3.41	2.46	—	—	—	24.36	22.88	—	—	45.38	54.62
—	—	—	—	3.62	2.46	—	—	—	24.11	22.88	—	—	45.56	54.44
.21	.80	4.52	Passed	5.53	3.30	—	—	—	18.42	20.00	—	—	75.87	24.13
.12	.33	3.40	Passed	3.85	3.50	—	—	—	23.09	20.00	—	—	47.69	52.31
.15	.05	3.72	Passed	3.92	3.82	—	—	—	24.67	24.70	—	—	76.05	23.95
.20	—	3.76	Passed	3.96	3.82	—	—	—	25.26	24.70	—	—	70.60	29.40
.13	—	3.80	Passed	3.93	3.82	—	—	—	25.89	24.70	—	—	76.56	23.44
.39	.77	2.70	Passed	3.86	3.50	—	—	—	20.33	20.00	—	—	57.67	42.33
.13	.53	2.15	Passed	2.81	2.47	—	—	—	23.57	22.90	—	—	71.67	28.33
.18	1.88	3.71	Passed	5.77	4.53	—	—	—	20.84	20.00	—	—	67.64	32.36
.19	.76	1.41	Passed	2.36	2.46	—	—	—	27.25	20.00	—	—	75.80	24.20
—	.38	3.56	Passed	3.94	2.46	—	—	—	25.55	20.00	—	—	67.28	32.72
.10	1.11	1.87	Passed	3.08	2.40	—	—	—	27.55	25.00	—	—	68.99	31.01
.25	.33	2.06	Passed	2.64	2.46	—	—	—	24.11	22.00	—	—	75.63	24.37
.27	1.50	1.43	Passed	3.20	3.25	—	—	—	26.18	24.15	—	—	62.34	37.66
.15	1.10	1.50	Passed	2.75	2.46	—	—	—	26.33	20.00	—	—	59.80	40.20
.34	1.37	6.19	Passed	7.90	7.41	—	7.02	2.55	9.57	9.15	7.02	—	45.42	54.58
.52	.76	4.44	Passed	5.72	4.94	—	9.80	5.89	15.69	13.73	9.80	—	57.87	42.13

Ground Tankage.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
TANKAGES				
Bowker Fertilizer Co., Boston, Mass.				
Bowker's 6% Fine Ground Bone Tankage	Ayer	Yes	864	10.68
Coe-Mortimer Co., New York City.				
Ground Tankage	Mt. Hermon	Yes	1223	7.91
Ground Tankage	Amherst	Yes	1307	12.53
John C. Dow Co., Boston, Mass.				
Dow's Ground Tankage	Concord	Yes	697	6.60
Dow's Ground Tankage	Concord	Yes	1298	4.10
Thomas Hersom & Co., New Bedford, Mass.				
Meat and Bone	New Bedford	Yes	202	7.37
A. W. Higgins, Westfield, Mass.				
Concentrated Tankage	Hatfield	Yes	11	7.36
Concentrated Tankage	Westfield	Yes	13	7.31
Concentrated Tankage	Sunderland	Yes	16	9.31
Concentrated Tankage	N Amherst	Yes	17	8.86
Concentrated Tankage	Hatfield	Yes	22	8.01
Concentrated Tankage	N. Amherst	Yes	47	8.89
Concentrated Tankage	N. Amherst	Yes	48	8.00
Concentrated Tankage	Whately	Yes	49	8.37
Concentrated Tankage	Holyoke	Yes	490	6.99
Concentrated Tankage	Westfield	Yes	1282	9.98
Home Soap Co., Worcester, Mass.				
Ground Tankage	Worcester	No	863	6.13
Ground Tankage	N. Grafton	—	1341	4.76
Lowell Fertilizer Co., Boston, Mass.				
Lowell Animal Tankage	Fall River	No	159	8.30
" " "	Fall River		162	
Jas. E. McGovern, Andover, Mass.				
Andover Animal Fertilizer	Andover	Yes	622	10.47
Tankage	Andover	—	1314	6.26
Nitrate Agencies Co., New York City.				
Ground Tankage	Titicut	Yes	124	9.65
F. S. Royster Guano Co., Baltimore, Md.				
Slaughter House Tankage	S. Williamstown	Yes	1153	10.27
" " "	Deerfield		1181	
Springfield Rendering Co., Springfield, Mass.				
Ground Tankage	Brightwood	No	1232	4.06
J. M. Woodard, Greenfield, Mass.				
Woodard's Unground Tankage	Conway	Yes	888	6.70
" " "	Greenfield		896	
Worcester Rendering Co., Worcester, Mass.				
Royal Worcester Ground Tankage	Worcester	Yes	859	6.95
" " " "	Worcester		963	
W. J. Tavender, Boston, Mass.				
Am Pho Nite	Boston	Yes	1124	7.43

Ground Tankage.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Mechanical Analysis	
				Total					Total		Available			
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed	Fine Bone	Coarse Bone
.29	1.09	3.56	Passed	4.94	4.94	—	—	—	16.05	13.73	—	—	44.91	55.09
.50	.10	7.69	Passed	8.29	7.41	—	—	—	9.80	9.15	—	—	57.43	42.57
.40	1.02	6.77	Passed	8.19	7.41	—	—	—	11.10	9.15	—	—	57.17	42.83
.17	.37	5.00	Passed	5.54	5.00	—	8.40	7.60	16.02	14.00	8.40	—	55.79	44.21
—	.63	4.71	Passed	5.34	5.00	—	—	—	15.27	14.00	—	—	—	—
.15	.81	3.55	Passed	4.51	4.00	—	—	—	19.57	16.00	—	—	77.55	22.45
—	10.38	1.13	Passed	11.51	10.00	—	—	—	1.48*	—	—	—	—	—
—	10.35	1.06	Passed	11.41	10.00	—	—	—	1.38*	—	—	—	—	—
—	—	—	Passed	11.03	11.00	—	—	—	—	—	—	—	—	—
—	—	—	Passed	11.57	11.00	—	—	—	—	—	—	—	—	—
—	—	—	Passed	11.55	11.00	—	—	—	—	—	—	—	—	—
—	—	—	Passed	11.52	11.00	—	—	—	—	—	—	—	—	—
—	—	—	Passed	11.47	11.00	—	—	—	—	—	—	—	—	—
—	—	—	Passed	11.38	11.00	—	—	—	—	—	—	—	—	—
—	—	—	Passed	11.66	11.00	—	—	—	—	—	—	—	—	—
1.66	4.90	2.77	Passed	9.33	—	—	—	—	1.22*	—	—	—	—	—
.23	1.05	3.23	Passed	4.51	11.00	—	10.88	9.49	20.37	1.68	10.88		57.70	42.30
.26	2.39	1.99	Passed	4.64		—	—	—	19.80	—	—	—	—	—
.22	2.40	2.07	Passed	4.69	4.92	—	—	—	14.29	14.00	—	—	61.43	38.57
.68	3.12	3.96	Passed	7.76	4.00	.68	6.54	3.42	10.64	8.00	7.22	—	—	—
—	—	—	—	4.97	—	—	10.32	6.96	17.28	—	10.32	—	82.15	17.85
.66	1.35	3.64	Passed	5.65	5.75	—	6.85	.61	7.46	6.86	6.85	—	55.58	44.42
.21	1.69	6.04	Passed	7.94	7.40	—		—	8.37	9.20	—	—	45.16	54.84
.26	2.54	3.76	Passed	6.56	7.40	—	—	—	15.51	12.00	—	—	64.85	35.15
.25	.92	4.00	Passed	5.17	4.50	—	—	—	19.16	18.00	—	—		
.29	4.28	2.83	Passed	7.40	7.00	—	—	—	12.22	12.00	—	—	49.01	50.99
.06	.06	.71	Inferior	.83	.25	—	1.77	12.87	14.64	1.25	—	—	—	—

*No. 11. Potassium oxide 1.69%.
13. " " 1.79%,
1282 " " 1.50%.

Dry Ground Fish.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture
DRY GROUND FISH				
American Agricultural Chemical Co., Boston, Mass.				
Dry Ground Fish	Sunderland	Yes	111	9.15
“ “ “	N. Hadley		646	
“ “ “	N Hatfield		1225	
Berkshire Fertilizer Co., Bridgeport, Conn.				
Berkshire Dry Ground Fish	S. Deerfield	No	137	9.06
“ “ “ “	Plainville		369	
“ “ “ “	N. Hadley		705	
Bowker Fertilizer Co., Boston, Mass.				
Bowker Dry Ground Fish	Deerfield	Yes	256	8.18
E. D. Chittenden Co., Bridgeport, Conn.				
Chittenden's Fine Ground Fish	Hadley	Yes	1173	8.70
A. W. Higgins, Westfield, Mass.				
Dry Ground Fish	Bradstreet	Yes	50	7.84
Dry Ground Fish	N. Amherst	Yes	51	8.95
Dry Ground Fish	Sunderland	Yes	52	14.67
Dry Ground Fish	Whately	Yes	54	8.79
Dry Ground Fish	Hatfield	Yes	354	9.52
Dry Ground Fish	Westfield	Yes	1322	7.58
International Agricultural Corporation, (Buffalo Fertilizer Works, Branch), Buffalo, N. Y.				
Dry Ground Fish	N Amherst	Yes	53	7.45
“ “ “	Hatfield		75	
Dry Ground Fish	Northampton	Yes	141	7.97
“ “ “	Hatfield		361	
“ “ “	Plainville		367	
Olds and Whipple, Hartford, Conn.				
Dry Ground Fish	Plainville	Yes	374	7.66
F. S. Royster Guano Co., Baltimore, Md.				
Dry Ground Fish	Deerfield	Yes	1182	8.40
Sanderson Fertilizer and Chemical Co., New Haven, Conn.				
Fine Ground Fish	Dighton	Yes	241	10.30
“ “ “	N. Hadley		715	
“ “ “	Sunderland		792	
Wilcox Fertilizer Co, Mystic, Conn.				
Dry Ground Fish Guano	Dighton	Yes	236	9.42
“ “ “ “	N. Hadley		653	
“ “ “ “	Dighton		729	
Dry Ground Fish Guano	Amherst	Yes	748	8.99
Dry Ground Fish Guano	Amherst	Yes	1306	8.01

Dry Ground Fish.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total					Total		Available	
As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Found	Guaranteed	Water Soluble	Reverted	Insoluble	Found	Guaranteed	Found	Guaranteed
.58	.30	7.51	Passed	8.39	8.23	—	5.43	1.15	6.58	6.00	5.43	—
.32	.35	7.30	Passed	7.97	8.23	—	4.88	1.68	6.56	6.00	4.88	—
.29	.44	7.52	Passed	8.25	8.23	—	4.90	.79	5.69	6.00	4.90	—
.42	.20	7.71	Passed	8.33	8.23	—	4.54	.74	5.28	6.00	4.54	—
.35	3.38	4.06	Passed	7.79	7.40	—	5.25	.77	6.02	5.00	5.25	—
.39	2.80	5.54	Passed	8.73	7.40	—	4.45	.36	4.81	5.00	4.45	—
.36	2.90	5.14	Passed	8.40	7.40	—	5.05	.33	5.38	5.00	5.05	—
.43	3.10	4.05	Passed	7.58	7.40	—	5.75	.30	6.05	5.00	5.75	—
.49	2.66	4.51	Passed	7.66	7.40	—	5.26	.53	5.79	5.00	5.26	—
.44	2.78	4.35	Passed	7.57	7.40	.19	5.00	.92	6.11	5.00	5.19	—
.43	.51	7.36	Passed	8.30	8.20	—	5.56	2.86	8.42	6.00	5.56	—
.39	.30	7.65	Passed	8.34	8.20	—	5.28	2.12	7.40	6.00	5.28	—
.21	.50	7.96	Passed	8.67	7.40	—	6.01	.85	6.86	5.50	6.01	4.50
.26	.56	8.43	Passed	9.25	8.23	.79	5.16	.33	6.28	5.00	5.95	4.00
.68	.58	7.40	Passed	8.66	8.23	—	6.42	1.08	7.50	6.00	6.42	—
.51	.46	8.40	Passed	9.37	8.24	.89	4.70	1.96	7.55	6.00	5.59	5.00
.43	.24	8.57	Passed	9.24	8.24	—	5.92	1.96	7.88	6.00	5.92	5.00
.50	.02	8.70	Passed	9.22	8.24	—	—	—	6.28	6.00	—	—

Lime Compounds.

Name of Manufacturer and Brand	Where Sampled	Chemical Analysis of Lime Products						
		Moisture	Calcium Oxide (Ca O)		Magnesium Oxide (Mg O)		Carbonic Acid (C O₂)	Insoluble Matter
			Found	Guaranteed	Found	Guaranteed		
BURNED OR CAUSTIC LIME.								
New England Lime Co., Danbury, Conn.								
Adams (Mass.) Fresh Burned Granulated Lime....	Adams ...	--	88.69	80	.59	0-3	8.32	1.2
Tidewater Portland Cement Co., Baltimore, Md.								
Tidewater Lump Lime..........................	Man'f't'rs Sample	-	94.54	92-97	1.42	1-2	1.22	1.7
HYDRATED OR SLAKED LIME.								
Berkshire Hills Co., Sheffield, Mass.								
Agricultural Lime............................	Sheffield.........	--	55.32	56 60	6.91	5-7	16 24	12 0
Edward Bryant & Co., Boston, Mass.								
Agricultural Lime............................	Boston.........		59.18	30-60	8.58	5 9	8.12	6 5
Cheshire Lime Manufacturing Co., Cheshire, Mass.								
Cheshire Agricultural Lime	N. Amherst...... Plainville........ E. Brookfield....	—	60.45	58.	2.23	.6	28 42	1 1
" " "								
" " "								
Farnam Cheshire Lime Co., Farnams, Mass.								
Farnams Agricultural Lime..................	Spencer.........	—	59 31	60.	1.05	0-1.50	27.49	3 3
Hoosac Valley Lime Co., Adams, Mass.								
Adams Agricultural Lime.....................	Adams	—	61.16	52.60	1.41	.44	12 56	9.2
Herbert Harris, Saylesville, R. I.								
Slaked Lime.................................	Seekonk		47.50	45.	22.12	15.	2.02	6 4
New England Lime Co., Danbury, Conn.								
Adams (Mass.) Agricultural Lime............	Adams..........	—	53 67	50—75	1.77	0-4	34 04	3 2
Connecticut Agricultural Lime..............	Amherst........	—	50 20	40.	28 98	15.	2.38	2
Olds and Whipple, Hartford, Conn.								
Agricultural Lime..........................	Sunderland......		60 59	60.	1 17	1.50	28.12	
Rockland and Rockport Lime Co., Rockland, Me.								
High Grade Calcium Lime	Fall River....... N. Grafton......	—	62 59	60.	1.33	.50	20 69	1
" " " "								
Tidewater Portland Cement Co., Baltimore, Md...								
Hydrated Lime................................	Man'f't'rs Sample	—	69.17	71-76	1 52	.5 1.75	7 27	1
West Stockbridge Lime Co., West Stockbridge, Mass.								
Agricultural Lime	West Stockbridge	.87	60.06	60 85	2.94	0-15.	18 48	1
Agricultural Lime............................	Ashland.........	4.57	55 47	60 85	3.44	0 15.	16 88	2
PRECIPITATED LIME.								
Hampton Co., Easthampton, Mass.								
Precipitated Lime............................	Amherst	2.35	53.98	52-57	1.19	.5-2.	33 44	1
Precipitated Lime	Easthampton....	1.18	53.12	52 57	.93	.5 2	37 25	
LIME ASHES.								
Edward Bryant & Co., Boston, Mass.								
Lime and Wood Ashes	Boston......	8 94	47.78	46	6.56	.86		6 4
Missisquoi Lime Works, High Gate Springs, Vt.								
Lime Ashes	Greenfield ...	32 30	31 44	30 60	3 60	Trace	-	9 8
Hoosac Valley Lime Co., Adams, Mass.								
Adams Lime Ashes	Sunderland......	7.24	55 84	30 90	68	1.		7 0
Adams Lime Ashes	N. Hadley...	7 00	54 58	30.90	.70	1.		4 8
New England Lime Co., Danbury, Conn.								
Canaan (Conn.) Lime Ashes..................	Man'f't'rs Sample	8 40	39 51	20-40	7.16	10-20		2 9
West Stockbridge Lime Co., West Stockbridge, Mass.								
Lime Ashes....................................	Ashland...	28 50	37 57	-	—	—		7 5
Ross Bros. Co., Worcester, Mass.								
Lime Ashes .	Worcester.....	2.51	56 32	--	—	—	—	7 4

†A 37.	Potash	1 10%.	phosphoric acid	.61%
45	"	.74%,	" "	.48%
3	"	.37%,	" "	.15%
23	"	.30%.	" "	.41%
40	"	3.06%.	" "	2.18%
52	"	.45%,	" "	.23%
54	"	.49%.	" "	.80%

Lime Compounds.

Laboratory Number	Cost of 100 lbs. of Calcium and Magnesium Oxides	Probable Composition of Lime Products as Based Upon Foregoing Analysis						
		Free Calcium Oxide (CaO)	Free Magnesium Oxide (MgO)	Hydrated or Slaked Lime (Calcium Hydrate) ($Ca(OH)_2$)	Calcium Carbonate ($CaCO_3$)	Magnesium Carbonate ($MgCO_3$)	Guaranteed Calcium and Magnesium Carbonates Combined	Magnesium Hydrate ($Mg(OH)_2$)
A 33	—	75.87	—	2.92	18.93	—	0-20	.85
A 41	—	92.23	—	.99	2.78	—	0-3	2.05
A 32	$.24a	18.66	—	21.09	36.94	—	33.	10.00
A 44	—	5.99	—	56.61	18.47	—	—	12.41
A 1 A 22 A 31	.50b	3.84	—	26.93	64.65	—	25.	3.23
A 30	1.24c	—	—	32.07	62.53	—	50.	1.52
A 36	.32d	—	—	59.66	28.57	—	.28	2.04
A 11	—	8.83	—	47.69	4.60	—	—	32.00
A 34	—	—	—	13.58	77.43	—	15-40	2.56
A 24	.41c	41.79	—	7.11	5.41	—	10.	41.93
A 19	.69c	—	—	32.69	63.97	—	50.	1.69
A 4 A 28	.68c	—	—	47.85	47.07	—	30.	1.92
A 42	—	—	—	79.15	16.54	—	0-2	2.20
A 39	—	—	—	49.55	42.04	—	—	4.25
A 49	—	—	—	44.86	38.40	—	—	4.98
A 17*	.41d	—	—	15.00	76.07	—	82.	1.72
A 47*	.41d	—	—	8.76	82.96	—	82.	1.35
A 37†	—	—	—	43.61	26.37	—	—	9.49
A 45†	—	—	—	16.00	34.50	—	—	5.21
A 3†	.75b	—	—	40.96	43.48	—	—	.98
A 23†	.75b	—	—	37.10	47.29	—	—	1.01
A 40†	—	—	—	4.64	64.24	—	—	10.36
A 52†	—	—	—	10.90	52.32	—	—	—
A 54†	—	—	—	33.05	55.87	—	—	—

a. Car lots in bulk for cash, f. o. b. kilns.
b. Car lots in bags for cash delivered.
c. Small lots in bags for cash, at retail.
d. Car lots in bags for cash, f. o. b. kilns.

*A17 and A47—99.67% passes a 200 mesh sieve.

Lime Compounds.

Name of Manufacturer and Brand	Where Sampled	Chemical Analysis of Lime Products						
		Moisture	Calcium Oxide (Ca O)		Magnesium Oxide (Mg O)		Carbonic Acid (CO_2)	Insoluble Matter
			Found	Guaranteed	Found	Guaranteed		
GROUND LIMESTONE.								
F. E. Conley Lime & Fertilizer Co., Utica, N. Y.								
Raw Ground Lime	Man'f't'rs Sample	.03	50.69	51.50	2.12	1.30	—	4.5
Edison Portland Cement Co., Stewartsville, N. J.								
Edison Pulverized Limestone	Spencer	.03	48.70	50.	1.67	1.12-2.24	—	7.
Grangers Lime & Marble Co., West Stockbridge, Mass.								
Ground Limestone, "Grangers"	New Bedford	—	44.13	45-50	5.02	0-5.	—	10.3
Ground Limestone, "Grangers"	Feeding Hills	.05	43.31	45-50	5.41	0-5.	—	11.
Ground Limestone, "Grangers"	West Stockbridge	.02	48.34	45-50	2.98	0-5.	—	6.
The Hoosac Co., North Adams, Mass.								
Ground Limestone	West Brookfield	—	54.78	52.	.55	1.	—	1.1
New England Lime Co., Danbury, Conn.								
Ground Limestone, Adams Product	Adams	—	55.01	50.44-54.92	.72	0-3	—	1.
Marble Flour	N. Grafton	.03	55.13	50.44-54.92	.04	0-3	—	1.5
Pownal Lime Co., 92 State St., Boston, Mass.								
Fine Ground Limestone	Sunderland	—	48.43	50.-55	4.11	.5-4.	—	4.3
" " "	Sunderland							
" " "	Plainville							
" " "	Boston							
" " "	Amherst							
" " "	Billerica							
" " "	Concord							
Rockland and Rockport Lime Co., Rockland, Me.								
R. R. Ground Limestone	Man'f't'rs Sample	.06	55.48	51.-55	1.33	0-3	38.06	2.5
Stearns Lime Co., Danbury, Conn.								
Ground Limestone for Soil Improvement	Dighton	.05	43.98	44.	5.40	4.	—	9.1
West Stockbridge Lime Co., West Stockbridge, Mass.								
Ground Limestone	West Stockbridge	.03	49.68	——	4.28	—	--	2.4
MARL								
International Agricultural Corporation, Buffalo, N. Y.								
Lime Carbonate "Marl"	Worcester	2.05	51.02	50.	.88	—	—	3.6
Lime Carbonate "Marl"	Auburn	1.59	48.92	50.	.83	—	—	3.5
GYPSUM (SULFATE OF LIME OR PLASTER)								
American Agricultural Chemical Co., Boston, Mass.								
Fine Ground Nova Scotia Plaster	Fall River	6.12	37.66	32.	.98	—	2.88	1.6
" " " " "	Boston							
" " " " "	Boston							
" " " " "	Newburyport							
Bowker Fertilizer Co., Boston, Mass.								
Bowker's Nova Scotia Plaster	Chelmsford	3.12	39.05	32.95	1.12	—	2.51	.6
Listers Agricultural Chemical Works, Newark, N. J.								
Fine Ground Nova Scotia Plaster	Fall River	5.36	37.99	32.95	1.16	—	3.08	.9

Lime Compounds.

		Equivalent in Calcium and Magnesium Carbonates			Mechanical Analysis; amounts (in percentages) that will pass various meshed sieves.				
Laboratory Number	Cost of 100 lbs. of Calcium and Magnesium Oxides	Calcium Carbonate (Ca C O_3)	Magnesium Carbonate (Mg C O_3)	Guaranteed Calcium and Magnesium Carbonates Combined	100 Mesh	80 Mesh	60 Mesh	40 Mesh	20 Mesh
A 43	—	90.46	4.43	97.8	39.34	41.06	48.68	57.10	85.08
A 29	1.49c	86.91	3.49	89.00	91.93	94.07	98.71	99.96	99.98
A 6	.81c	78.75	10.50	90.00	62.16	65.46	79.30	98.33	98.48
A 46	—	77.30	11.31	90.00	—	—	—	—	—
A 48	—	86.26	6.23	90.00	—	—	—	—	—
A 26	.43b	97.75	1.15	96.00	92.86	94.20	98.81	99.45	99.85
A 35	—	97.22	1.51	90–98	97.05	98.85	99.89	100.	100.
A 51	—	98.38	.08	90–98	85.03	87.51	97.14	99.74	100.
A 2 A 8 A 12 A 14 A 18 A 21 A 25	.36b	86.42	8.60	91.00	80.64	82.83	87.96	91.71	99.55
A 38	—	86.58*	—	92–99	80.21	82.60	89.52	95.07	99.96
A 7	—	78.48	11.29	90.	66.23	68.98	77.88	85.87	98.66
A 53	—	88.65	8.95	—	52.06	55.80	75.03	98.71	100.
A 10	.58b	91.05	1.84	89.23	52.73	54.42	62.88	68.95	82.19
A 27	.64c	87.30	1.74	89.23	58.19	60.21	69.87	76.51	90.27
								Calcium Sulfate Gypsum (Ca SO_4) Found	Guaranteed
								Found	Guaranteed
A 5 A 13 A 15 A 16	—	4.12	2.05	—	—	—	—	85.81	80.00
A 20	—	2.93	2.34	—	—	—	—	90.82	80.00
A 9	—	4.12	2.43	—	—	—	—	86.61	80.00

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b. Car lots in bags, for cash, delivered.
c. Small lots in bags, for cash, at retail.
*A38. Calcium Hydrate 9.20%, Magnesium Hydrate 1.92%.

Nitrogen Compounds.

Name of Manufacturer and Brand	Where Sampled.	Guarantee Substantially Met (?)	Laboratory Number.	Moisture.	Nitrogen in 100 lbs.	
					Found	Guaranteed
NITRATE OF SODA.						
American Agric. Chem. Co., Boston, Mass.						
Nitrate of Soda	Dighton	Yes	332	1.65	15.70	15.00
" " "	Boston		402			
" " "	Millis		551			
" " "	Concord		698			
" " "	Sturbridge		917			
Armour Fertilizer Works, Baltimore, Md.						
Nitrate of Soda	E. Brookfield	Yes	1081	1.34	15.90	14.81
Baugh and Sons Co., Philadelphia, Pa.						
Nitrate of Soda	N. Dighton	Yes	337	1.74	15.34	15.00
Bowker Fertilizer Co., Boston, Mass.						
Nitrate of Soda	Dighton	Yes	249	2.44	15.68	15.00
" " "	N. Dighton		290			
Coe-Mortimer Co., New York City.						
Nitrate of Soda	Berlin	Yes	930	1.44	15.98	15.00
A. W. Higgins, Westfield, Mass.						
Nitrate of Soda	Sunderland	Yes	55	2.00	15.42	15.00
" " "	N. Amherst		82			
" " "	N. Amherst		99			
" " "	N. Amherst		107			
Nitrate Agencies Co., New York City.						
Nitrate of Soda	Titicut	Yes	126	1.16	15.22	15.00
Nitrate of Soda	New Bedford	Yes	179	1.10	15.82	15.00
Nitrate of Soda	Southwick	Yes	436	2.15	15.72	15.00
Nitrate of Soda	Amherst	Yes	1303	1.62	15.80	15.00
Ross Bros. Co., Worcester, Mass.						
Nitrate of Soda	Lawrence	Yes	628	1.98	15.60	15.00
" " "	Worcester		857			
F. S. Royster Guano Co., Baltimore, Md.						
Nitrate of Soda	Orange	Yes	1185	1.22	15.60	15.00
Wilcox Fertilizer Co., Mystic, Conn.						
Nitrate of Soda	Fall River	Yes	154	1.52	15.56	15.00
" " "	Dighton		728			
" " "	Amherst		750			
" " "	Three Rivers		1103			
SULFATE OF AMMONIA.						
A. W. Higgins, Westfield, Mass.						
Sulfate of Ammonia	S. Deerfield	Yes	127	.10	20.78	20.00
Listers Agricultural Chem. Works, Newark, N. J.						
Sulfate of Ammonia	Boston	Yes	384	1.26	20.80	20.16
CASTOR POMACE.						
A. W. Higgins, Westfield, Mass.						
Castor Pomace	N. Amherst	Yes	91	9.05	5.82	5.55
Castor Pomace	Bradstreet	Yes	93	10.05	6.09	5.00
Castor Pomace	Feeding Hills	Yes	876	10.17	5.90	5.00
Castor Pomace	Feeding Hills	Yes	877	10.11	5.98	5.00
Castor Pomace	Chicopee Falls	Yes	1335	11.60	6.21	5.00
Olds and Whipple, Hartford, Conn.						
Castor Pomace	Sunderland	Yes	58	7.63	5.28	5.00
Castor Pomace	Hatfield	Yes	350	7.93	5.57	5.00
Castor Pomace	Hatfield	Yes	410	7.31	5.21	5.00
Castor Pomace	Sunderland	Yes	486	7.08	5.18	5.00
Castor Pomace	Plainville	Yes	548	6.45	5.26	5.00

Nitrogen Compounds.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met	Laboratory Number	Moisture	Nitrogen in 100 lbs.					
					As Nitrates and Ammoniates	Water Soluble Organic	Water Insoluble Organic	Quality of Organic Nitrogen	Total	
									Found	Guaranteed
DRIED BLOOD.										
Amer. Agric. Chem Co., Boston. Mass.										
High Grade Dried Blood	Boston	Yes	381	8.52	.37	.31	9.43	Passed	10.11*	9.87
High Grade Dried Blood	Boston	Yes	429	11.49	.47	.19	10.30	Passed	10.96*	9.87
High Grade Dried Blood	Worcester	Yes	858	11.77	.46	.09	9.81	Passed	10.36*	9.87
Bowker Fertilizer Co., Boston, Mass.										
Dried Blood	Ayer	Yes	821	12.62	.33	.24	10.03	Passed	10.60*	9.87
Coe-Mortimer Co., New York City.										
High Grade Dried Blood	Mt. Hermon	Yes	1222	11.95	.42	.13	9.77	Passed	10.32*	9.87
Nitrate Agencies Co., New York City.										
Dried Blood	Titicut	Yes	125	8.11	.37	-	13.76	Passed	14.13*	13.00
CALCIUM CYANAMID.										
A. W. Higgins, Westfield, Mass.										
Cyanamid	Bradstreet	Yes	12	1.19	—	15.47	.96	Passed	16.43	16.00
Cyanamid	Sunderland		57							
"	Whately		85							
"	N. Amherst	Yes	88	.89	-	17.77	.61	Passed	18.38	16.00
"	N. Amherst		108							
"	Hadley		326							
"	Southwick		437							
Cyanamid	Easthampton	No	1263	1.18	—	14.53	.81	Passed	15.34	16.00
COMMERCIAL PEAT OR HUMUS PRODUCTS.										
Alphano Humus Co., New York City.										
Raw Sun-Cured Alphano Humus	Winchester	Yes	1248	44.70	.15	.05	1.34	Inferior	1.54	1.28
Raw Sun-Cured Alphano Humus	Watertown	Yes	1274	54.88	-	—	—	Inferior	1.31	1.28
Boston Humus Co., E. Lexington, Mass.										
Natural Humus	E. Lexington	Yes	520	30.20	.13	.03	1.69	Inferior	1.85	1.00
Boston Humus	E. Lexington	Yes	531	23.63	.12	—	1.89	Inferior	2.01*	1.35
" "	Concord		846							
Boston Plant Life	E. Lexington	Yes	532	13.11	.58	—	2.34	Inferior	2.92*	.50
SOOT.										
E. B. Blood Co., Brockton, Mass.										
Electric Cut Worm Exterm. & Fert.	Brockton	Yes	454	4.32	.64	.07	.95	Inferior	1.66*	1.50
COTTONSEED MEAL.										
F. W. Brode & Co., Memphis, Tenn.										
Owl Brand Cottonseed Meal	Bradstreet	No	23	9.18	-	---	-	—	6.39	6.56
Owl Brand Cottonseed Meal	Bradstreet	No	24	9.33	—	-	—	—	6.31	6.56
Owl Brand Cottonseed Meal	Westfield	Yes	39	8.96	—	—	-	—	6.59	6.56
Owl Brand Cottonseed Meal	Bradstreet	Yes	41	8.29	—	—	—	—	6.58	6.56
Owl Brand Cottonseed Meal	Bradstreet	No	42	9.15	—	—	-	—	6.41	6.56
Owl Brand Cottonseed Meal	Bradstreet	No	897	8.45	—	—	—	—	6.32	6.56
Owl Brand Cottonseed Meal	Wilbraham	Yes	1315	9.00	—	—	-	—	6.85	6.56
Owl Brand Cottonseed Meal	Chicopee Fl's	No	1334	10.38	-	-	—	—	5.80	6.56
Buckeye Cotton Oil Co., Cincinnati, O.										
Buckeye Prime Cottonseed Meal	Bradstreet	Yes	6	8.35	—	—	—	—	6.29	6.18
Buckeye Prime Cottonseed Meal	Hatfield	Yes	21	8.43	—	—	—	—	6.13	6.18
Buckeye Prime Cottonseed Meal	Hatfield	Yes	37	8.07	—	—	—	—	6.25	6.18
Buckeye Prime Cottonseed Meal	Hatfield	Yes	35	7.76	—	—	-	—	6.21	6.18
Buckeye Prime Cottonseed Meal	Hatfield	Yes	36	8.24	—	—	—	—	6.22	6.18
Buckeye Cottonseed Meal	Hatfield	Yes	356	8.63	—	—	—	—	6.17	5.76
Buckeye Prime Cottonseed Meal	Whately	No	879	7.72	—	—	-	—	6.00	6.18
Buckeye Cottonseed Meal	N. Hatfield	Yes	1319	9.32	—	—	—	—	5.87	5.76
S. P. Davis, Little Rock, Ark.										
Good Luck Brand Cottonseed Meal	Bradstreet	Yes	34	7.91	—	—	—	—	6.73	6.50
Good Luck Brand Cottonseed Meal	Southwick	Yes	430	8.39	-	—	—	—	6.68	6.67
Good Luck Brand Cottonseed Meal	Feeding Hills	Yes	869	7.83	—	—	—	—	6.61	6.50

*No. 381. Total phosphoric acid present 7.25%.
929. " " " " 1.22%.
858. " " " " 1.40%.
821. " " " " 1.43%.
1222. " " " " 1.15%.
125. " " " " .47%.
531-846. " " " " .80%. guaranteed .35%.
532. " " " " .71%. guaranteed .50%.
454. " " " " .29%.

NOTE—Cottonseed meal contains on the average 2 to 3 per cent of phosphoric acid and from 1.5 to 2.5 per cent of potash, of which about 1.28% is water soluble.

Nitrogen Compounds.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture	Nitrogen in 100 lbs.	
					Found	Guaranteed
COTTONSEED MEAL.						
Humphreys Godwin Co., Memphis, Tenn.						
Dixie Brand Cottonseed Meal	Amherst	No	3	8.31	6.15	6.56
Dixie Brand Cottonseed Meal	Amherst	No	4	7.43	6.17	6.56
Dixie Brand Cottonseed Meal	Amherst	No	5	8.69	5.94	6.56
Dixie Brand Cottonseed Meal	Hatfield	Yes	38	9.17	6.71	6.56
Dixie Brand Cottonseed Meal	Feeding Hills	Yes	253	8.35	6.71	6.56
Dixie Brand Cottonseed Meal	Deerfield	No	255	10.42	5.23	6.00
Dixie Brand Cottonseed Meal	Hadley	No	349	9.88	5.30	6.50
Dixie Brand Cottonseed Meal	Sunderland	Yes	713	7.26	7.00	6.18
Dixie Brand Cottonseed Meal	N. Amherst	Yes	1003	7.27	6.88	6.08
Dixie Brand Cottonseed Meal	N. Amherst	Yes	1005	6.35	6.77	6.18
Dixie Brand Cottonseed Meal	N. Hadley	Yes	1084	9.47	6.63	6.56
Dixie Brand Cottonseed Meal	Bradstreet	Yes	1174	8.11	6.80	6.50
Dixie Brand Cottonseed Meal	Easthampton	No	1264	11.04	5.24	6.50
Topsy Brand Cottonseed Meal	Hadley	No	432	10.83	5.52	6.50
Topsy Brand Cottonseed Meal	Hadley	No	655	10.30	5.06	6.50
Topsy Brand Cottonseed Meal	Hadley	No	656	9.24	5.81	6.50
Bull Brand Cottonseed Meal	Amherst	Yes	7	8.90	6.76	6.56
High Grade Cottonseed Meal	Hatfield	—	32	7.90	7.51	—
C. L. Montgomery & Co., Memphis, Tenn.						
Canary Brand Cottonseed Meal	Bradstreet	Yes	1	7.40	6.59	6.18
Canary Brand Cottonseed Meal	Cushman	No	19	8.14	5.58	6.18
J. E. Soper Co., Boston, Mass.						
Pilgrim Cottonseed Meal	Bradstreet	No	2	7.49	5.81	6.00
Pilgrim Cottonseed Meal	Southwick	Yes	1329	8.13	6.04	6.19
Pilgrim Cottonseed Meal	Southwick	Yes	1330	7.77	6.70	6.16
Pilgrim Cottonseed Meal	Southwick	No	1331	7.94	5.94	6.16
Pioneer Cottonseed Meal	Whately	Yes	878	7.85	6.55	6.50
Pioneer Cottonseed Meal	Framingham	No	1016	8.02	5.61	6.50
Cottonseed Meal	Southwick	Yes	1337	7.85	5.66	5.76
Union Seed and Fertilizer Co., New York City.						
American Red Tag Cottonseed Meal	Hatfield	No	10	8.78	5.92	6.17
American Red Tag Cottonseed Meal	Bradstreet	No	20	8.25	6.07	6.17
American Red Tag Cottonseed Meal	Bradstreet	Yes	25	9.50	6.44	6.08
American Red Tag Cottonseed Meal	Whately	Yes	29	8.49	6.43	6.17
American Red Tag Cottonseed Meal	Amherst	Yes	33	7.73	6.08	6.17
American Red Tag Cottonseed Meal	Whately	No	40	9.36	5.79	6.17
American Red Tag Cottonseed Meal	N. Amherst	Yes	43	9.07	6.23	6.17
American Red Tag Cottonseed Meal	Sunderland	No	44	8.51	5.90	6.17
American Red Tag Cottonseed Meal	Sunderland	Yes	45	9.53	6.32	6.17
American Red Tag Cottonseed Meal	Sunderland	Yes	46	9.50	6.24	6.17
American Red Tag Cottonseed Meal	Northampton	Yes	140	8.11	6.21	6.17
American Red Tag Cottonseed Meal	Deerfield	Yes	254	9.76	6.18	6.17
American Red Tag Cottonseed Meal	Bradstreet	Yes	262	10.46	6.49	6.17
American Red Tag Cottonseed Meal	Bradstreet	Yes	263	8.98	6.21	6.17
American Red Tag Cottonseed Meal	Hadley	Yes	323	9.89	6.40	6.17
American Red Tag Cottonseed Meal	Bradstreet	No	407	9.86	5.96	6.17
American Red Tag Cottonseed Meal	Westfield	Yes	431	8.29	6.17	6.17
American Red Tag Cottonseed Meal	Sunderland	Yes	704	9.03	6.28	6.17
American Red Tag Cottonseed Meal	Westfield	Yes	782	9.00	6.27	6.17
American Red Tag Cottonseed Meal	Hadley	No	815	8.01	5.98	6.17
American Red Tag Cottonseed Meal	Northampton	Yes	816	8.47	6.07	6.17
American Red Tag Cottonseed Meal	Feeding Hills	Yes	870	8.89	6.17	6.17
American Red Tag Cottonseed Meal	Feeding Hills	Yes	871	9.16	6.33	6.17
American Red Tag Cottonseed Meal	Feeding Hills	Yes	872	8.65	6.23	6.17
American Red Tag Cottonseed Meal	Feeding Hills	Yes	873	8.20	6.43	6.17
American Red Tag Cottonseed Meal	Feeding Hills	Yes	874	9.15	6.31	6.17
American Red Tag Cottonseed Meal	Feeding Hills	Yes	875	8.90	6.18	6.17*

NOTE—The Red Tag Brand Cottonseed Meal was guaranteed 1.50% potash and 1.86% was found; phosphoric acid 2.75% guaranteed, 2.68% found. In addidtion to the above analyses of this brand eleven other carloads were analyzed with the following average results. Moisture 8.17%, nitrogen 6.22%. Lack of space prevented the printing of details of each analysis.

Phosphoric Acid Compounds.

Name of Manufacturer and Brand	Where Sampled	Guarantee Substantially Met (?)	Laboratory Number	Moisture	Phosphoric Acid in 100 lbs.						
					Water Soluble	Reverted	Insoluble	Total		Available	
								Found	Guaranteed	Found	Guaranteed
ACID PHOSPHATE OR SUPERPHOSPHATE.											
Amer. Agric. Chem. Co., Boston, Mass.											
Plain Superphosphate 14%	Boston	Yes	385	5.99	8.90	5.69	1.33	15.92	15.00	14.59	14.00
“ “ “	Boston		424								
“ “ “	Chelmsford		563								
“ “ “	Walpole		1113								
Plain Superphosphate 16%	Millis	Yes	550	8.51	10.33	6.18	.89	17.40	17.00	16.51	16.00
“ “ “	Lawrence		624								
“ “ “	Concord		695								
Plain Superphosphate 16%	Concord	Yes	839	7.33	8.74	7.21	1.91	17.86	17.00	15.95	16.00
Armour Fert. Works, Baltimore, Md.											
Star Phosphate	Worcester	Yes	856	9.79	12.22	2.73	.03	14.98	14.50	14.95	14.00
Bowker Fert. Co., Boston, Mass.											
Bowker's Soluble Phosphate, 14%	Boston	Yes	1239	7.30	10.14	4.80	.83	15.77	15 00	14.94	14.00
Bowker's 16% Acid Phosphate	Mt. Hermon.	Yes	1220	7.15	8.76	8.28	.74	17.78	17.00	17.04	16.00
Coe-Mortimer Co., New York City.											
High Grade Soluble Phosphate	Berlin	Yes	927	6.60	10.10	5.05	1.15	16.30	15 00	15.15	14.00
Acid Phosphate	Amherst	Yes	1311	8.19	8.44	7.87	1.33	17.64	17.00	16.31	16.00
A. W. Higgins, Westfield, Mass.											
Acid Phosphate	Sunderland	Yes	56	10.60	13.39	3.34	.75	17.48	17.00	16.73	16.00
“ “	N. Amherst		83								
“ “	Whately		87								
“ “	N. Amherst		89								
Acid Phosphate	Bradstreet	Yes	26	14.14	12.69	3.28	1.05	17.02	17.00	15.97	16.00
Acid Phosphate	N. Amherst	Yes	90	10.73	13.46	3.33	.79	17.58	17.00	16.79	16.00
“ “	Bradstreet		94								
“ “	Hadley		325								
“ “	Whately		881								
Acid Phosphate	Easthampton	Yes	1261	10.33	13.78	2.85	.97	17.60	17.00	16.63	16.00
International Agricultural Corp., (Buffalo Fert. Works Branch)											
Buffalo Acid Phosphate	Worcester	Yes	333	5.71	14.11	2.96	.41	17.48	17.00	17.07	16.00
Listers Agric. Chem. Wks., Newark, N.J.											
Listers Buyers' Choice Acid Phosp	Mf'rs. Smpl.	Yes	1252	9.90	9 80	5.20	.26	15.26	15.00	15.00	14.00
Nitrate Agencies Co., New York City.											
H. G. Acid Phosphate, 14%	New Bedford	Yes	185	11.47	12.41	3.11	.48	16.00	15 00	15.52	14.00
H. G. Acid Phosphate, 16%	Titicut	Yes	120	13.10	15.50	1.17	.40	17.07	17.00	16.67	16.00
H. G. Acid Phosphate, 16%	S. Deerfield	Yes	136	12.50	14.26	3.06	.18	17.50	17.00	17.32	16.00
“ “ “ “	New Bedf'd		180								
“ “ “ “	Southwick		434								
H. G. Acid Phosphate, 16%	Farley	Yes	1342	8.15	14.84	2.71	.09	17.64	17.00	17.55	16.00
Olds & Whipple, Hartford, Ct.											
Acid Phosphate, 16%	Sunderland	Yes	275	9.22	11.99	4.67	.84	17.50	17.00	16.66	16.00
F. S. Royster Guano Co., Baltimore, Md.											
Acid Phosphate, 16%	Middleboro	Yes	499	7.81	13.67	3.85	.64	18.16	16.50	17.52	16.00
“ “ “	Holyoke		1104								
“ “ “	Deerfield		1179								
“ “ “	Orange		1192								
“ “ “	Charlemont		1193								
Sand. Fert. & Chem. Co., N. Haven, Ct.											
Plain Superphosphate	Sunderland	Yes	791	9.15	14.86	2.92	.18	17.96	15.00	17.78	14.00
“ “	Three Rivers		1102								
BASIC LIME AND BASIC SLAG PHOSPHATE.											
Amer. Agric. Chem. Co., Boston, Mass.											
Basic Lime Phosphate	Sturbridge	Yes	920	4.55	.96	11.89	1.67	14.52	14.00	12.85*	13.00
Coe-Mortimer Co., New York City.											
Basic Fruit and Legume Phosphate	S. Amherst	Yes	1171	5.37	1.06	11.69	1.45	14.20	14.00	12.75	13.00
Sand. Fert. & Chem. Co., N. Haven, Ct.											
Basic Lime Phosphate	Three Rivers	Yes	1095	11.13	10.10	3.22	1.17	14.49	14.00	13.32	13.00
Tennessee Coal, Iron and R. R. Co., Birmingham, Ala.											
Duplex Basic Phosphate	Titicut	Yes	121	.10	—	17.18	2.46	19.64	18.00	17.18	—
Duplex Basic Phosphate	Amherst	Yes	1312	.13	—	18.33	1.87	20.20	18.00	18.33	—
GROUND PHOSPHATE ROCK.											
Bowker Fertilizer Co., Boston, Mass.											
Ground Untreated Phosphate Rock	Mt. Hermon.	Yes	1224	.47	—	—	—	30.67	30.20	—	—
N. E. Phosphate Co., Boston, Mass.											
Phosfood	Boston	Yes	617	.59	—	—	—	32.07	30.00	—	—
Raw Products Co., Boston, Mass.											
Florida Raw Ground Phosphate	Boston	Yes	762	.42	—	—	—	31.05	31.00	—	—

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*NOTE—No. 920 Basic Lime Phosphate was guaranteed in calcium oxide 30%, found 33.60%. 17.21% of the lime was apparently present in combination with phosphoric acid and in form of gypsum, so that only about 16.39%. was present in form similar to agricultural lime.

CONTROL SERIES. BULLETIN NO. 7. OCTOBER, 1917.

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION

Inspection of Commercial Feedstuffs

By

P. H. SMITH

This bulletin contains, in a somewhat condensed form, the results of the feeding stuff inspection for the year ending September 1, 1917. In addition will be found a special article entitled "The Grain Problem." A tabulated list of the wholesale cost of feedstuffs for the year, based upon Boston rate, is also given.

Requests for bulletins should be addressed to the
AGRICULTURAL EXPERIMENT STATION,
AMHERST, MASS.

Department of Chemistry

J. B. LINDSEY, *Chemist.*

INSPECTION OF COMMERCIAL FEEDSTUFFS

By P. H. SMITH, *Chemist in Charge.**

INTRODUCTION

This bulletin contains, in a somewhat condensed form, the results of the feeding stuff inspection for the period extending from September 1, 1916, to April 1, 1917. The reasons for the abridgment are the greatly increased cost of everything entering into the work of collection and analysis, and the fact that the cost of publication itself has nearly doubled during the past few years.

In spite of the fact that this bulletin is of necessity somewhat curtailed, the interests of the consumer have been looked after as in preceding years. The inspector was on the road almost continuously from September 1 to April 1, and occasionally during the late spring and summer.

One hundred and forty-one places of business were visited at least once; 1082 samples were collected and analyzed, and about 1400 brands were registered for sale in Massachusetts. The detailed data are on file and available to the public through correspondence, if not found in this publication.

Although prices have ruled high and actual shortage has at times existed, goods offered have, with few exceptions, been as represented. During the year four cases have been prosecuted where goods ran substantially below guarantee, and one case for failure to attach guarantee tags. In addition a number of samples have been drawn for the Federal Government and action is still pending. **The dealer must understand that violators will be**

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* The inspection and collection of samples were carried out by J.T.Howard. The analyses of the samples were largely made by J. B. Smith, assisted by the writer.

prosecuted either by the Director of the Station under the State Statute, or by the Federal authorities under the Pure Food and Drugs Act. Several lots of goods were found running below guarantee where the amount in stock was so small as to render prosecution inadvisable. Notice however, was sent to dealers and where goods remained in stock after the analysis was completed, the dealers were asked to retag with correct guarantees.

The consumer should bear in mind that **the guarantee does not of necessity imply quality, and that it is simply intended as a guide to the purchaser.** Inferior goods may be legally sold if correctly guaranteed.

Contrary to our usual custom, no general attempt has been made to discuss the commercial values of the different feeding stuffs, as conditions are so uncertain as to render statements which may be true at the present time of little value later in the year. In general it may be said that the carbohydrate or starchy feeds, such as corn meal, hominy and the like, have been relatively higher in price than the protein concentrates such as cottonseed meal, linseed meal and gluten feed. If this condition continues, the dairyman will do well to feed maximum amounts of the latter products using as small amounts as possible of the cereal meals.

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED

I. Protein Feeds

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Cottonseed Meal										
1	Goodlow	M. F. Baringer	7.40	32.84	36.00	5.82	5.00	33.30	14.79	16.00	5.85
1		Bowen & Fuller	9.93	37.83	38.62	6.75	6.00	27.86	11.82	12.00	5.81
6	Dove	F. W. Brode & Co.	7.30	38.67	38.63	7.43	6.00	29.50	10.98	12.00	6.12
2	Owl	F. W. Brode & Co.	8.01	39.05	41.00	6.99	6.00	29.17	10.69	10.00	6.09
6	Buckeye, Prime	Buckeye Cotton Oil Co.	6.83	39.11	38.62	6.54	6.00	30.25	10.83	12.00	6.44
1	Buckeye, Good	Buckeye Cotton Oil Co.	7.48	37.09	36.00	6.37	5.00	29.34	13.69	14.00	6.03
2	Baby Camel	C. L. Campbell & Co.	7.43	35.81	36.00	6.24	6.00	31.06	13.63	15.00	5.83
3	Single Hump	C. L. Campbell & Co.	7.35	39.27	38.50	7.45	6.00	28.59	10.76	12.00	6.58
1	Milko	H. F. H. Eberts	7.47	37.46	38.62	8.33	5.00	30.36	9.88	10.00	6.50
1	Big League	Eldred Mill Co.	7.05	38.13	38.62	5.51	6.00	30.39	13.15	12.00	5.77
1	Equity	Feeders Supply Co.	7.88	37.59	38.62	6.08	5.00	29.38	12.97	12.00	6.10
1	Bull	Humphreys-Godwin Co.	6.47	43.61	41.00	8.50	6.00	27.75	7.00	10.00	6.67
13	Danish	Humphreys-Godwin Co.	7.68	36.23	36.00	6.74	5.00	30.44	12.80	15.00	6.11
3	Dixie	Humphreys-Godwin Co.	8.01	36.43	38.62	6.76	6.00	30.17	12.42	12.00	6.21
11	Forfat	Humphreys-Godwin Co.	6.95	38.64	38.55	7.08	6.00	28.90	12.16	12.00	6.27
1	Canary	Lanier Bros.	9.36	40.20	41.00	7.08	6.00	28.24	9.32	10.00	5.80
2	Jersey	Lanier Bros.	7.62	35.15	38.62	5.45	6.00	30.74	14.92	10.00	6.12
3	Kineda	J. M. MacDonald	7.41	37.67	38.60	7.87	6.00	30.20	10.64	12.00	6.21
7	Canary	C. L. Montgomery & Co.	7.83	37.13	38.62	6.57	6.00	31.54	11.12	12.00	5.81
1	Butterfly	W. C. Nothern	7.02	36.23	39.00	7.16	6.00	28.85	14.60	12.00	6.14
1		W. C. Nothern	11.25	34.99	36.00	6.21	5.00	27.21	14.67	12.00	5.67
2	Dirigo	W. Newton Smith	7.90	40.71	41.00	7.88	7.00	26.81	10.61	10.50	6.09
10	Pilgrim	J. E. Soper Co.	7.11	38.82	38.50	7.23	5.00	29.72	11.22	10.00	5.90
4	Puritan	J. E. Soper Co.	7.10	34.81	36.00	6.02	5.00	32.57	13.90	15.00	5.60
6	Red Tag	Union Seed & Fertilizer Co.	7.71	38.07	38.62	6.77	6.00	29.59	11.63	11.50	6.23
4	Security	Union Seed & Fertilizer Co.	8.07	36.91	36.00	6.20	5.50	30.59	12.30	14.00	5.93
94	All Samples		7.50	37.70	—	6.78	—	30.15	11.78	—	6.09
	Cottonseed Feed Meal										
2	Buco	Buckeye Cotton Oil Co.	8.07	18.11	20.00	3.09	3.50	41.51	25.40	23.00	3.82
1	Dirigo	W. Newton Smith	7.55	19.00	38.50	3.44	7.00	39.18	26.75	10.50	4.08
1	Dirigo	W. Newton Smith	—	19.94	—	3.13	—	—	25.86	—	—

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED.—(*Continued*)

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Linseed Meal										
1	New Process	American Linseed Co.	10.03	38.61	36.00	2.40	2.00	34.51	8.15	9.00	6.30
10	Hypro, old process	American Linseed Co.	8.82	34.90	34.00	6.79	5.00	35.74	7.75	8.00	6.00
10	Old Process	Archer-Daniels Linseed Co.	8.82	35.08	33.00	7.23	6.00	36.27	7.26	10.00	5.34
1	Old Process	Kelloggs & Miller	8.76	34.71	31.00	6.23	4.00	36.99	7.90	6.00	5.41
9	Old Process	Spencer Kellogg & Sons	8.78	34.68	33.00	5.92	5.00	37.31	7.93	10.00	5.38
3	Old Process	Toledo Seed & Oil Co.	8.79	30.74	30.00	6.57	5.00	39.28	8.33	10.00	6.29
2	Old Process	Waver-Ryan & Co.	10.07	30.36	30.00	6.60	7.00	36.74	10.70	11.20	5.53
	Miscellaneous Oil Cakes										
1	Homcoline, corn germ meal	American Hominy Co.	6.11	18.77	17.00	7.48	5.00	51.26	8.30	7.00	8.08
1	Alpha, peanut oil meal	Oil Seeds Co.	8.37	41.33	40.00	10.74	7.00	30.12	4.13	5.00	5.31
1	Beta, peanut oil meal	Oil Seeds Co.	6.64	31.86	30.00	12.14	7.00	36.60	8.42	8.00	4.34
1	Osco, sesame oil meal	Oil Seeds Co.	6.33	41.64	35.00	15.41	8.00	20.86	4.04	10.00	11.72
	Gluten Meal										
10	Diamond	Corn Products Refining Co.	9.47	42.66	40.00	0.98	1.00	43.98	1.79	4.00	1.12
	Gluten Feed										
3	Cream of Corn	American Maize Products Co.	8.63	21.17	24.00	1.77	1.50	58.70	7.60	8.50	2.13
4	Clinton	Clinton Sugar Refining Co.	8.84	25.78	23.00	3.16	3.00	52.74	7.21	8.00	2.27
13	Buffalo	Corn Products Refining Co.	8.94	26.35	23.00	2.47	1.00	50.54	7.70	8.50	4.00
1	Crescent	Corn Products Refining Co.	8.67	25.22	23.00	2.56	1.00	51.44	8.42	8.50	3.69
3	Globe	Corn Products Refining Co.	10.70	28.27	23.00	1.34	1.00	47.85	6.85	8.50	4.99
3	Douglas	Douglas Co.	9.17	24.60	23.00	2.00	1.00	53.94	7.12	8.00	3.17
7	Staley's	A. E. Staley Mfg. Co.	7.65	24.46	23.00	3.13	2.50	53.93	7.32	12.00	3.51
	Distillers' Grains										
14	Ajax Flakes	Ajax Milling & Feed Co.	5.99	32.63	30.00	9.24	10.00	37.34	12.18	14.00	2.62
1	Empire State	American Milling Co.	4.17	31.26	30.00	11.05	10.00	38.33	13.12	14.00	2.07
2	Atlas	Atlas Feed & Milling Co.	6.30	31.77	30.00	8.20	11.00	38.79	13.22	14.00	1.72
1	Bartlett's National	J. E. Bartlett Co.	5.98	34.38	30.00	10.56	10.00	34.96	12.42	11.00	1.70
1	Buckeye	Dewey Bros. Co.	4.23	18.83	20.00	3.16	5.00	56.49	13.62	15.00	3.67

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED.—(*Continued*)

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Distillers' Grains—*Continued*										
3	Eagle 3D	Dewey Bros. Co.	5.23	30.24	30.00	10.79	10.00	38.46	13.31	13.00	1.97
2	Queen 3D	Dewey Bros. Co.	5.57	16.07	16.00	6.25	4.00	54.61	15.62	15.00	1.88
1	Hiquality	Donahue-Stratton Co.	5.40	34.38	30.00	11.97	10.00	34.48	11.92	14.00	1.85
1	Columbia	Grain Products Sales Co.	4.20	32.70	30.00	8.39	10.00	41.97	8.91	14.00	3.83
1	Hector	Hottelet Co.	5.80	30.96	30.00	10.05	10.00	38.01	12.52	14.00	2.66
1	Alco Flakes	Chas. F. Riordan	5.83	27.84	30.00	7.07	10.00	46.20	9.16	14.00	3.90
6	Fourex	Ubiko Milling Co.	5.70	30.43	31.00	9.57	12.00	40.48	10.55	13.00	3.27
1	Rye Grains	Ubiko Milling Co.	7.07	15.22	15.50	6.40	7.00	53.91	15.60	14.00	1.80
	Malt Sprouts										
2		Chas. M. Cox Co.	7.95	24.22	25.00	1.78	1.50	51.85	14.20	—	5.21
	Brewers' Grains										
1		Burkhardt Brewery	5.67	23.47	25.00	6.49	5.00	46.20	14.97	15.00	3.20
8	Bull	Farmers Feed Co.	6.77	29.72	27.20	6.50	6.30	40.77	13.02	15.20	3.22
3		Haffenreffer & Co.	5.95	26.15	23.00	5.36	5.00	45.03	14.20	18.00	3.31
2		James Hanley Brewing Co.	7.28	25.03	20.00	6.21	6.00	42.78	14.88	18.00	3.82
1		Hottelet & Co.	6.38	21.69	25.00	5.97	5.00	49.85	12.19	14.00	3.92
1		Muessel Brewing Co.	8.52	28.19	24.00	7.19	6.10	39.82	14.70	16.10	3.58
6		Providence Brewing Co.	6.31	28.24	22.00	6.28	5.00	42.77	13.38	15.00	3.02
2		Frederick J. Volkman	5.81	23.50	23.00	9.33	5.00	43.14	15.23	15.00	2.99
2		Western Grains & Feed Co.	5.99	20.48	20.00	8.65	5.00	44.23	17.30	16.00	3.35
	Yeast and Vinegar Grains										
7	F. M. Co.	Fleischmann Co.	5.55	20.71	20.00	7.02	7.00	47.41	17.04	19.00	2.27
5	I. V. M. Co.	Fleischmann Co.	6.05	18.34	19.00	6.71	7.00	48.09	18.39	19.00	2.42
	Wheat Middlings, Red Dog and Low Grade										
1	Atlas Red Dog	Atlas Flour Mills	10.35	17.60	17.00	5.04	4.00	58.89	4.10	5.00	4.02
1	Low Grade Flour	Barber Milling Co.	10.70	16.99	18.00	4.97	5.00	62.53	1.31	4.00	3.50
2	Red Dog	Duluth Superior Milling Co.	10.37	16.68	16.75	4.47	4.25	63.00	2.75	3.00	2.73

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED.—*(Continued)*

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Wheat Middlings, Red Dog and Low Grade—*(Continued)*										
1	Superb Red Dog	Eagle Roller Mill Co.	10.82	16.84	17.00	4.74	4.40	61.57	3.40	7.40	2.63
2	Red Dog	Hecker-Jones-Jewell Milling Co.	10.67	17.73	16.75	4.77	4.50	62.01	2.09	5.00	2.73
1	XXX Comet	Northwestern Consol. Mlg. Co.	10.57	18.81	16.00	4.95	4.00	61.19	1.35	3.00	3.13
3	XX Daisy	Pillsbury Flour Mills Co.	11.08	17.04	16.00	4.17	4.00	62.34	1.81	4.00	3.56
1	Red Dog	Rush City Milling Co.	9.40	15.54	15.00	3.52	3.50	66.66	2.55	5.50	2.33
1	Low Grade Flour	Sheffield-King Milling Co.	10.35	17.08	16.90	5.19	4.60	62.87	1.69	1.75	2.82
1	Arlington Flour	Washburn Crosby Co.	11.50	14.10	14.00	2.64	4.00	70.05	0.35	4.00	1.36
5	Adrian Red Dog	Washburn Crosby Co.	10.06	18.14	16.00	5.27	4.00	59.60	3.44	4.00	3.49
	Wheat Middlings, Flour and Standard										
2	Standard	Atlas Flour Mills	9.92	14.19	12.50	4.48	4.50	55.76	9.77	11.00	5.88
2	Banner Standard	Banner Milling Co.	9.86	16.31	15.00	5.05	4.25	57.68	7.45	11.75	4.45
2	Standard	Cataract City Milling Co.	7.28	16.47	15.00	5.27	4.50	58.11	7.97	10.00	4.90
1	Poland Standard	Geo. C. Christian	9.90	16.79	14.00	5.40	4.00	56.63	6.93	11.00	4.35
1	Commander Flour	Commander Mill Co.	10.43	16.69	17.00	5.26	4.50	58.77	4.83	9.00	4.02
3	Wirthmore	Chas. M. Cox Co.	10.30	16.22	15.00	4.79	4.00	58.15	6.40	7.00	4.14
1	Granite	J. G. Davis & Co.	9.90	17.28	15.50	5.39	4.50	57.60	5.73	10.00	4.10
3	Standard	Duluth Superior Milling Co.	9.58	16.93	16.50	5.54	3.75	56.65	6.58	7.75	4.72
1	....	Wm. Hamilton & Son	9.17	16.33	15.05	5.25	4.53	60.83	4.54	3.95	3.88
1	Fancy White	Hecker-Jones-Jewell Milling Co.	10.00	18.24	16.75	5.29	5.00	59.85	3.22	5.50	3.40
1	H	Hecker-Jones-Jewell Milling Co.	9.02	16.24	15.50	4.47	4.75	57.92	7.62	8.00	4.73
3	Standard	Hecker-Jones-Jewell Milling Co.	9.54	17.64	16.50	5.69	6.00	54.75	7.56	8.50	4.82
1	Standard	Listman Mill Co.	9.58	18.42	16.29	6.88	5.09	54.62	6.52	5.30	3.98
1	Rex	Maple Leaf Milling Co.	10.40	16.11	16.00	5.23	5.50	58.21	6.27	10.00	3.78
3	Millbourne	Millbourne Mills	8.98	16.34	16.00	3.84	4.00	60.10	6.21	4.00	4.53
5	....	Niagara Falls Milling Co.	9.14	16.15	14.00	5.43	4.00	56.13	8.07	11.00	5.08
1	Flour	Northwestern Consol. Mlg. Co.	9.25	16.69	15.50	5.03	4.50	58.51	6.34	6.00	4.18
6	Standard	Northwestern Consol. Mlg. Co.	9.25	16.00	15.00	5.37	4.50	55.69	8.76	11.00	4.93
3	....	Ogilvie Flour Mills Co.	9.73	16.56	15.00	5.10	5.00	56.56	8.00	8.00	4.05
1	A	Pillsbury Flour Mills Co.	12.22	17.48	15.00	4.42	4.00	56.23	4.32	9.00	5.33

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED.—*(Continued)*

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Wheat Middlings, Flour and Standard—*(Continued)*										
7	B	Pillsbury Flour Mills Co.	9.69	15.75	14.00	4.89	4.00	55.04	8.95	11.00	5.68
1	Standard	Pillsbury Flour Mills Co.	10.48	16.53	14.00	5.03	4.00	52.80	9.10	11.00	6.06
3	Quaker City	Quaker City Flour Mills Co.	10.38	15.53	14.00	4.78	4.00	59.73	5.05	5.50	4.53
4	Standard	Russell-Miller Milling Co.	9.24	16.21	15.00	5.31	4.00	56.89	7.56	9.00	4.79
1	Snowball	Shane Bros. & Wilson Co.	10.42	15.92	15.00	5.06	4.50	56.70	7.35	7.00	4.55
1	Stotts	David Stott Flour Mills Co.	11.25	13.93	15.00	3.42	4.50	65.12	3.18	6.50	3.10
1	Standard	Tennant & Hoyt Co.	8.20	17.83	16.00	5.11	5.00	56.89	6.82	8.00	5.15
7	Standard	Washburn Crosby Co.	10.10	16.54	14.00	5.09	4.00	55.23	8.05	11.00	4.99
	Wheat Mixed Feed										
1	Banner	Banner Milling Co.	9.57	16.03	15.00	5.00	4.25	56.03	7.97	11.75	5.40
2	Favorite	Britton Milling Co.	8.97	15.12	14.40	5.31	4.70	57.90	7.55	7.00	5.15
1	. . . .	Cataract City Milling Co.	7.70	15.71	15.00	4.93	4.40	57.48	8.78	11.00	5.40
10	Wirthmore	Chas. M. Cox Co.	9.03	15.93	16.00	4.59	4.00	58.41	7.14	7.00	4.90
10	Boston	Duluth-Superior Milling Co.	8.96	15.53	15.00	5.00	4.25	57.51	7.97	9.75	5.03
2	Lucky	Federal Milling Co.	8.69	16.07	14.00	4.44	3.00	57.17	8.28	11.00	5.35
3	Royal Worcester	J. B. Garland & Son	9.60	16.17	16.00	4.37	4.50	59.03	6.21	7.00	4.62
5	Grafton	Grafton Roller Mills Co.	9.26	15.53	14.00	5.33	2.70	58.93	6.51	8.40	4.44
1	. . . .	Hecker-Jones-Jewell Milling Co.	9.92	16.38	14.75	4.96	3.75	56.30	7.62	11.50	4.82
1	Anchor	Kemper Mill & Elevator Co.	8.17	17.03	16.00	3.73	4.00	56.39	8.65	10.00	6.03
1	Snowflake	Lawrenceburg Roller Mills	8.22	15.85	15.20	4.37	4.30	58.27	7.81	8.00	5.48
5	Planet	Northwestern Consol. Mlg. Co.	9.12	16.97	15.00	5.07	4.00	58.02	6.15	8.00	4.67
1	Paramount	Paramount Flour Mill & Grain Co.	9.27	16.06	15.00	5.11	4.50	54.95	8.81	10.00	5.80
10	Fancy	Pillsbury Flour Mills Co.	9.78	16.38	14.00	4.38	4.00	59.14	5.95	10.00	4.37
1	Royal	Royal Milling Co.	8.82	16.71	15.00	4.54	3.50	57.58	7.53	8.00	4.82
18	Occident	Russell-Miller Milling Co.	9.05	16.26	15.00	5.33	4.50	57.06	7.56	10.00	4.74
1	Franklin	St. Albans Grain Co.	9.17	16.08	16.60	4.67	4.50	56.32	8.63	9.50	5.13
9	Gold Mine	Sheffield King Milling Co.	9.30	15.65	15.00	4.88	4.50	56.64	8.55	9.90	4.98
6	Try Me	Sparks Milling Co.	8.73	17.17	16.00	4.11	3.50	56.34	7.78	9.00	5.87
1	Wabash	Sparks Milling Co.	7.60	14.61	14.00	4.95	3.50	58.18	8.83	11.00	5.83
2	Stratton's	Stratton & Co.	8.80	15.48	14.00	4.72	4.00	57.96	7.35	9.00	5.69

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED.—(*Continued*)

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Wheat Mixed Feed—(*Cont.*)										
1	T. & C.	Thornton & Chester Milling Co.	9.67	15.18	14.00	4.53	4.50	57.33	8.11	11.00	5.18
1	Middlesex	C. W. Wagar & Co.	9.25	16.53	14.50	3.75	4.00	58.50	6.60	10.00	5.37
2		Waggoner-Gates Milling Co.	8.69	16.60	15.00	4.26	3.00	57.48	7.20	10.00	5.77
2		Washburn & Crosby Co.	9.23	15.70	14.00	4.27	4.00	58.84	7.14	10.00	4.82
1	Blue Seal	H. K. Webster Co.	8.82	16.49	16.00	5.37	4.00	56.36	7.94	7.00	5.02
2	Kent	Williams Bros. Co.	9.87	14.86	14.00	3.97	4.00	59.68	6.89	8.00	4.73
72	Wheat Bran	All Samples	8.83	15.20	—	4.81	—	54.96	9.87	—	6.33
	Durum Wheat Products										
1	Middlings	Pillsbury Flour Mills Co.	9.17	15.38	12.50	6.33	4.00	54.19	9.00	11.00	5.93
1	Nokomos Bran	Yerxa, Andrews & Thurston	9.30	14.26	12.00	5.30	5.50	55.60	10.74	13.00	4.80
	Wheat Feeds with Admixtures										
8	Buckeye (wheat and rye feeds)	Quaker Oats Co	8.97	16.28	15.50	4.89	4.50	55.58	8.66	8.50	5.62
3	Sterling (wheat with corn and cob meal)	Indiana Milling Co.	8.69	9.75	10.00	3.24	3.00	57.63	16.90	16.00	3.79
1	Blue Grass Valley (wheat with corn and cob meal)	A. Waller & Co.	9.37	9.70	9.00	2.80	2.00	58.78	15.85	15.00	3.50
	Dairy Feeds (more than 15% protein)										
3	Creamery Feed	Buffalo Cereal Co.	8.14	18.10	18.00	4.75	4.00	51.87	12.06	9.00	5.08
8	Unicorn Dairy Ration	Chapin & Co.	7.49	27.26	26.00	6.14	5.50	43.45	10.42	11.00	5.24
4	Wirthmore Balanced Ration	Chas. M. Cox Co.	7.32	25.79	25.50	4.70	5.20	48.00	10.01	9.50	4.18
1	Crosby's Ready Ration	E. Crosby & Co.	8.33	22.81	25.00	7.30	7.00	46.72	10.61	9.00	4.23
4	Elmore Milk Grains	Elmore Milling Co.	7.21	27.94	25.00	6.39	6.00	43.82	10.18	12.00	4.46
1	Red Horn Dairy Feed	Hales & Edwards Co.	7.60	25.64	25.00	4.08	4.00	45.54	12.34	16.00	4.80
15	Larro Feed	Larrowe Milling Co.	8.67	20.35	20.00	3.95	3.00	50.70	11.80	14.00	4.53
1	Justice Creamery	Nowak Milling Co.	8.47	23.29	22.00	6.69	4.00	42.30	12.85	12.00	6.40
12	Stevens 44 Dairy Ration	Oswego Milling Co.	7.95	24.74	24.00	6.18	5.00	43.94	12.59	14.00	4.60
3	Ropes Horse Feed	Ropes Bros.	8.90	17.71	16.00	5.44	5.00	53.79	9.46	9.00	4.70
1	Red Brand Tioga Dairy Feed	Tioga Mill & Elevator Co.	7.62	26.86	25.00	8.11	2.50	43.55	9.46	11.00	4.40

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED.—(*Continued*)

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Dairy Feeds—(*Continued*) (more than 15% protein)										
8	Union Grains	Ubiko Milling Co.	7.50	24.20	24.00	6.52	7.00	46.97	9.81	9.00	5.00
2	Woods Dairy Blend	A. H. Wood & Co.	9.14	23.76	22.00	5.51	6.00	45.03	9.77	10.00	6.79
	Molasses Feeds (containing over 15% protein)										
1	Full Pail Dairy Feed	Alfocorn Milling Co.	13.85	15.34	16.00	3.06	3.00	50.43	12.64	15.00	4.68
2	Sucrene Dairy Feed	American Milling Co.	12.55	17.43	16.50	5.50	3.50	46.50	11.18	12.00	6.84
1	Arcady Dairy Feed	Arcady Farm Milling Co.	11.62	16.33	18.00	4.19	3.50	46.34	12.96	14.00	8.56
3	Cloverleaf Dairy Ration	Cloverleaf Milling Co.	12.76	16.31	16.50	2.77	4.00	45.19	14.43	15.00	8.54
5	Domino Butterine Dairy Feed	Nowak Milling Corp.	13.08	17.04	17.00	3.96	3.50	45.78	11.42	12.00	8.72
1	Blue Ribbon Dairy Feed	Quaker Oats Co.	11.30	23.00	25.00	5.13	3.50	42.34	12.28	12.00	5.95
11	Purina Cow Chow Feed	Ralston Purina Co.	11.98	24.65	24.00	3.72	4.50	39.42	13.61	13.50	6.62
2	Protena Dairy Feed	Ralston Purina Co.	11.43	16.61	16.50	4.29	3.50	46.69	13.26	12.00	7.72
6	Hammond Dairy Feed	Western Grain Products Co.	12.53	16.45	16.50	4.15	3.50	44.09	12.94	12.00	9.84
	Rye Feeds										
1	Fort Orange	Barber & Bennett	9.75	15.88	13.75	2.93	2.75	60.86	5.96	7.00	4.62
1	Rye Feed	Boutwell Milling Co.	9.05	15.50	13.50	3.24	3.00	63.37	4.87	6.00	3.97
1	Rye Middlings	Washburn Crosby Co.	9.63	15.94	14.00	3.60	3.00	62.27	4.63	6.00	3.93
	Calf Meals										
2	Blatchfords	Blatchfords Calf Meal Factory	9.54	24.70	24.00	6.37	5.00	46.34	7.51	6.75	5.54
2	Schumachers	Quaker Oats Co.	7.62	18.10	18.00	8.79	8.00	58.49	2.88	4.00	4.12
1	Ryde's Cream	Ryde & Co.	10.15	25.79	25.00	5.45	5.00	47.86	5.47	6.00	5.28
2	Sugarota	Sugarota Calf Meal Co.	10.33	23.04	25.00	5.12	6.00	53.47	4.46	6.00	3.58

II. Starchy (Carbohydrate) Feeds

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Corn										
14	Corn Meal	All Samples	12.50	9.32	—	3.45	—	71.31	2.21	—	1.21
1	Amco Corn Feed Meal	Amendt Milling Co.	9.17	10.52	8.50	8.22	2.50	63.75	6.09	6.50	2.25
1	Cracked Corn Siftings	J. S. Nason & Co.	15.67	8.96	—	2.33	—	70.21	1.85	—	0.98
1	Corn Bran	J. Cushing & Co.	7.92	9.77	—	2.90	—	67.53	10.50	—	1.38
2	Corn and Cob Meal	Heffner Milling Co.	11.08	6.82	7.00	2.27	3.00	69.85	8.90	9.00	1.08
	Oats										
2	Ground Oats	All Samples	8.77	13.26	—	4.27	—	60.85	9.70	—	3.15
1	Oat Groats	J. Cushing & Co.	8.12	14.68	—	5.76	—	68.37	1.20	—	1.87
	Hominy Feed										
9	Homco	American Hominy Co.	8.65	10.63	10.00	7.19	6.00	66.25	4.88	7.00	2.40
15	Spring Garden	Baltimore Pearl Hominy Co.	9.37	11.34	10.00	6.76	6.00	64.61	4.83	6.00	3.09
4	Bufceco	Buffalo Cereal Co.	9.80	11.45	10.00	6.68	6.00	65.26	4.07	5.00	2.74
1		Cereal Mills Co.	9.07	11.73	11.25	7.75	8.50	64.68	3.95	4.00	2.82
8	Paragon	Chas. M. Cox Co.	8.78	11.43	9.50	6.97	7.50	64.96	5.09	7.00	2.77
1	Wirthmore	Chas. M. Cox Co.	9.27	10.01	9.50	7.77	7.50	66.44	4.04	5.00	2.47
1	Yellow	Eagle Roller Mill Co.	9.80	11.18	10.00	4.36	4.00	67.49	4.45	8.07	2.72
1	Emco	Evans Milling Co.	8.33	11.06	10.00	8.18	7.50	64.69	5.16	7.00	2.58
1	Badger	Chas. A. Krause Milling Co.	9.78	10.72	10.00	5.95	6.00	66.42	4.33	5.00	2.80
8		Miner-Hillard Milling Co.	9.92	10.96	10.00	5.61	5.00	67.01	3.86	5.00	2.64
2		Mystic Milling Co.	9.99	10.39	11.00	5.62	6.50	68.60	3.50	5.00	1.90
2		National Feed Co.	8.90	12.28	10.50	8.35	3.50	62.41	5.26	10.00	2.80
6		Patent Cereals Co.	9.03	11.70	10.00	5.63	6.00	65.77	5.12	5.00	2.75
2	Iowa	Purity Oats Co.	10.08	9.97	9.00	5.28	5.00	68.93	3.77	7.00	1.97
3	Yellow	Quaker Oats Co.	9.93	11.15	9.00	6.68	4.00	65.87	4.14	4.00	2.23
5	Blue Ribbon	J. E. Soper Co.	9.48	11.37	10.00	5.44	6.00	66.03	5.08	5.00	2.60
1	Logan	Standard Cereal Co.	8.77	10.77	9.00	8.11	7.00	65.23	4.44	6.00	2.68
2	Acme	Suffern-Hunt	8.73	11.01	9.50	8.35	7.00	65.98	3.83	7.00	2.10
	Provender										
3	Nu Life	J. J. Badenoch Co.	9.11	10.30	9.50	4.68	4.00	67.20	6.10	4.00	2.61
1	No. 1	E. A. Cowee Co.	8.67	9.19	9.00	4.05	5.00	65.16	10.13	10.00	2.80

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED.—(*Continued*)

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Provender—(*Continued*)										
7	Imperial Steam Cooked	Imperial Grain Milling Co.	9.68	10.18	9.50	4.60	4.00	68.86	4.67	4.00	2.01
1		J. S. Nason & Co.	9.68	9.70	—	3.48	—	67.87	7.25	—	2.02
	Stock and Horse Feeds										
1	Portage Stock Feed	Akron Feed & Milling Co.	6.97	9.87	8.00	6.07	4.00	58.25	12.67	10.00	6.17
3	Spring Garden Horse Feed	Baltimore Pearl Hominy Co.	8.66	11.73	12.00	6.54	5.00	63.29	6.52	10.00	3.26
3	Horse Feed	Buffalo Cereal Co.	8.88	10.77	11.00	4.02	4.00	62.15	10.73	9.00	3.45
2	Steam Cooked Feed	Buffalo Cereal Co.	8.11	9.94	10.00	4.78	4.00	65.38	8.69	8.00	3.10
1	Stock Feed	Buffalo Cereal Co.	9.02	9.21	10.00	3.24	5.00	64.46	10.19	10.00	3.88
1	Corno Stock Feed	Corno Mills Co.	6.83	10.05	9.00	4.79	4.50	64.62	9.78	12.75	3.93
1	Charlestock Feed	Chas. M. Cox Co.	8.77	7.97	6.00	2.64	3.00	63.76	13.36	16.00	3.50
9	Wirthmore Stock Feed	Chas. M. Cox Co.	7.79	9.83	9.00	6.31	5.00	63.02	9.75	9.50	3.30
1	Crawford's Stock Feed	Crawford Bros.	8.52	10.80	9.00	4.46	4.00	60.57	11.40	13.00	4.25
4	Quality Stock Feed	J. Cushing & Co.	8.21	10.14	9.00	6.50	6.00	63.69	8.12	9.00	3.34
5	Red Tag A. Chop Feed	J. B. Garland & Son	8.63	11.74	7.00	4.74	3.00	57.80	12.82	14.00	4.27
5	Red Tag B. Chop Feed	J. B. Garland & Son	8.41	10.63	7.00	4.41	3.00	58.50	13.87	16.00	4.18
1	No. 1 Chop Feed	Globe Elevator Co.	11.80	9.28	7.00	3.84	3.00	66.65	6.11	9.00	2.32
8	Grandin's Stock Feed	D. H. Grandin Milling Co.	8.55	9.48	8.50	6.41	4.00	61.69	10.10	13.00	3.77
1	Greene's Stock Feed	Greene Chicken Feed Co.	8.12	10.54	14.00	5.22	5.00	50.35	17.77	10.00	8.00
7	Haskell's Stock Feed	W. H. Haskell & Co.	7.93	9.99	9.00	6.82	6.00	63.63	8.36	9.00	3.27
1	Colonial Feed	W. B. Herrick	9.80	13.73	10.00	5.50	6.00	53.57	10.67	8.00	6.73
2	New England Stock Feed	H-O Co.	7.65	9.78	9.00	5.04	4.00	62.04	11.26	10.00	4.23
2	Badger Stock Feed	Chas. A. Krause Milling Co.	8.45	8.88	10.00	4.23	4.50	58.46	15.63	12.00	4.35
1	Corn Meal and Wheat Bran	Malden Grain Co.	9.43	9.46	—	2.33	—	71.26	5.20	—	2.32
2	M. & S. Stock Feed	Meech & Stoddard Inc.	9.28	10.14	9.00	4.97	3.00	62.44	9.82	12.00	3.35
4	Domino Stock Feed	Nowak Milling Corp.	8.65	9.74	10.00	4.74	3.00	60.68	11.62	9.00	4.57
1	Justice Stock Feed	Nowak Milling Corp.	8.03	8.55	8.00	4.40	3.00	61.12	13.95	12.00	3.95
2	Special Provender	W. N. Potter & Sons	10.08	8.82	8.75	2.76	3.50	67.27	8.57	8.00	2.50
1	Prairie State Chop Feed	Prairie State Milling Co.	11.57	9.98	8.00	3.52	2.50	59.70	9.30	11.00	5.93
2	Iowa Stock Feed	Purity Oats Co.	9.38	10.11	10.00	4.27	4.00	61.93	10.43	12.75	3.88
1	Boss Feed	Quaker Oats Co.	10.80	8.71	8.00	2.85	3.00	63.99	10.73	12.00	2.92
7	Schumacher Feed	Quaker Oats Co.	9.62	10.95	10.00	3.71	3.25	61.12	11.04	10.00	3.56

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED.—(*Continued*)

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Stock and Horse Feeds — (*Continued*)										
2	Victor Feed	Quaker Oats Co.	11.22	8.02	8.00	2.85	3.00	63.35	11.24	12.00	3.32
2	White Diamond Feed	Quaker Oats Co.	10.60	8.27	8.00	3.29	3.25	66.27	8.94	9.00	2.63
1	Economy Dairy Feed	Tioga Mill & Elevator Co.	8.42	11.54	12.50	3.63	3.00	58.21	12.60	17.50	5.60
2	Blue Seal Horse Feed	H. K. Webster Co.	9.03	12.59	11.00	5.14	5.00	61.01	8.45	8.00	3.78
1	Williams' Horse Feed	M. G. Williams	9.15	10.27	10.00	3.14	4.50	63.02	10.47	12.00	3.95
1	Williams' Stock Feed	M. G. Williams	9.72	12.98	11.00	3.50	4.00	58.67	10.90	12.00	4.23
	Miscellaneous Feeds										
14	Dried Beet Pulp	All Samples	8.23	9.29	8.00	0.70	0.50	59.95	18.92	20.00	2.91
1	Dried Beet Pulp with Molasses	Larrowe Milling Co.	8.93	8.44	9.00	0.57	0.50	60.79	17.77	18.00	3.50
1	Dried Grains (Mellen's Food Refuse)	A. H. Brown & Bros.	7.53	12.61	10.00	4.19	2.50	57.17	14.70	20.00	3.80
7	Oat Feed	All Samples	6.57	6.00	—	2.39	—	53.52	25.98	—	5.54
1	Palmo Meal	Newsome Feed & Grain Co.	8.33	6.90	—	8.54	—	19.00	48.65	—	8.58
	Molasses Feeds (Less than 15% protein)										
1	Alfocorn Spec. Horse & Mule F'd	Alfocorn Milling Co.	16.72	10.29	9.00	2.51	1.50	56.52	9.43	15.00	4.53
2	King Cotton Horse & Mule Feed	Alfocorn Milling Co.	17.60	9.53	9.00	2.04	1.50	54.27	10.04	15.00	6.52
2	Leader Horse & Mule Feed	Alfocorn Milling Co.	12.82	11.53	9.00	1.89	1.50	55.26	11.18	15.00	7.32
1	Sweet Meal	Alfocorn Milling Co.	8.24	11.53	10.00	0.85	1.00	51.06	19.57	20.00	8.75
1	Tip-Top Alfalfa Horse Feed	American Milling Co.	13.06	12.63	10.00	2.70	2.50	50.88	14.00	12.00	6.73
6	Cloverleaf Dairy Feed	Cloverleaf Milling Co.	13.04	14.17	13.50	2.99	4.00	45.56	15.43	15.00	8.81
2	Cloverleaf Horse Feed	Cloverleaf Milling Co.	15.22	10.00	10.00	2.48	2.00	58.73	9.47	12.00	4.10
1	Corno Sweet Feed	Corno Mills Co.	12.74	11.06	10.00	1.87	2.50	55.00	12.57	15.00	6.13
2	H. & S. Horse, Mule & Dairy F'd	Dwight E. Hamlin	14.83	14.42	14.00	3.00	3.50	48.56	12.43	16.00	6.76
2	Kingfalfa Horse Feed	Howard H. Hawks Co.	17.90	11.86	8.00	1.39	2.00	48.87	11.99	15.00	7.99
2	Algrane Horse Feed	H-O Co.	10.95	11.20	11.00	4.08	4.00	58.45	10.41	10.00	4.91
3	Algrane Milk Feed	H-O Co.	11.79	14.15	14.00	3.42	4.00	52.30	12.92	10.00	5.42
1	Special Dairy Feed	International Sugar Feed Co.	14.54	14.55	15.00	5.47	4.50	42.78	13.24	12.00	9.42
1	Badger Horse Feed	Chas. A. Krause Milling Co.	18.27	10.22	10.00	2.31	2.00	51.83	11.60	12.00	5.77

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED—(*Continued*)

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
	Molasses Feeds—(*Continued*) **(Less than 15% protein)**										
1	Pawnee Sweet Feed	National Oats Co.	14.20	9.47	10.00	1.92	2.00	57.05	12.32	19.00	5.04
1	Domino Alfalfa Horse Feed	Nowak Milling Corp.	14.96	11.39	9.00	2.30	2.00	49.28	13.77	12.00	8.30
4	Domino Vim O-Lene	Nowak Milling Corp.	14.14	9.88	8.00	3.87	2.00	59.82	7.33	9.00	4.96
3	Green Meadow Dairy Feed	Omaha Alfalfa Milling Co.	17.06	11.72	11.00	0.71	1.00	44.41	17.02	25.00	9.08
1	Omaha Special Horse Feed	Omaha Alfalfa Milling Co.	14.35	10.10	10.00	1.57	2.00	51.46	15.72	12.00	6.80
8	Peerless Alfalmo Horse Feed	Omaha Alfalfa Milling Co.	15.65	11.29	10.00	1.71	2.00	52.52	12.22	12.00	6.61
5	Horse Feed	Park & Pollard Co.	17.26	10.94	9.00	1.97	1.50	53.73	9.93	12.00	6.17
2	Arab Horse Feed	M. C. Peters Mill Co.	13.69	11.42	9.00	2.45	2.00	55.06	12.56	15.00	4.82
3	Peters' Re-Peter Horse Feed	M. C. Peters Mill Co.	13.94	12.05	9.00	2.34	1.50	53.84	12.33	18.00	5.50
1	Emerald Horse Feed	Prairie State Milling Co.	16.46	10.62	10.00	2.01	2.00	50.54	13.68	12.00	6.69
2	Green Cross Horse Feed	Quaker Oats Co.	14.32	9.53	10.00	2.33	2.50	56.65	12.06	12.00	5.11
1	Mogul Feed	Quaker Oats Co.	13.00	9.29	10.00	3.16	2.50	53.14	15.28	15.00	6.13
1	Good Luck Feed	Ralston Purina Co.	16.89	9.03	9.00	1.87	1.50	53.46	12.49	12.00	6.26
4	Purina O-Molene	Ralston Purina Co.	15.17	9.49	9.70	3.58	3.20	61.65	6.55	8.50	3.56
3	Purina Feed with Molasses	Ralston Purina Co.	15.80	9.26	9.30	2.47	1.70	56.90	10.43	13.00	5.14
1	Tom Boy Horse Feed	Purity Oats Co.	15.43	10.44	9.00	1.36	2.00	50.75	15.14	18.00	6.88
1	Colonel's Ration	Tioga Mill & Elev. Co.	13.04	13.56	12.00	3.42	2.50	52.09	12.32	15.00	5.57
1	Economy Dairy Feed	Tioga Mill & Elev. Co.	10.74	10.74	12.50	3.52	3.00	56.42	13.18	17.50	5.40
1	Alfalfa Strong Horse Feed	Wash Co. Alfalfa Milling Co.	16.76	11.02	9.00	1.42	2.00	51.47	11.69	25.00	7.64
2	Xtra Vim Feed	Xtra Vim Molasses Feed Co.	24.31	3.62	4.60	0.56	0.60	61.67	6.02	5.00	3.82

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED—*(Continued)*

III. Poultry Feeds

No. Samples	Feedstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
			%	%	%	%	%	%	%	%	%
3	Cut Clover	All Samples	7.17	10.26	7.91	2.06	3.36	46.42	28.49	29.84	5.60
12	Alfalfa Meal	All Samples	7.28	15.35	—	1.67	—	39.00	28.41	—	8.29
4	Milk Mash	Blatchfords Calf Meal Factory	8.80	22.00	20.00	4.69	4.00	47.75	5.57	7.50	11.19
2	Fill the Basket Mash	Blatchfords Calf Meal Factory	9.22	19.99	19.00	4.65	4.00	49.36	7.30	10.00	9.48
1	Breck's Mash Food	J. Breck & Sons Corp	9.17	15.88	11.50	4.77	3.50	52.50	10.15	10.00	7.53
1	Bufceco Poultry Mash	Buffalo Cereal Co	8.63	15.01	15.00	4.73	4.00	62.98	5.50	6.00	3.15
1	Climax Dry Mash	E. A. Cowee Co	9.40	19.79	20.00	3.99	3.50	50.76	6.13	10.00	9.93
1	Climax Growing Feed	E. A. Cowee Co	7.88	16.32	14.00	4.37	4.00	57.42	5.56	5.00	8.45
1	Wirthmore Growing Feed	Chas. M. Cox Co	10.33	10.97	12.00	3.25	4.00	68.28	5.00	4.50	2.17
1	Wirthmore Grow. F'd (with s'ps)	Chas. M. Cox Co	10.30	12.24	15.00	3.52	4.50	64.60	4.01	4.50	5.33
1	Wirthmore Grow. F'd (with fish)	Chas. M. Cox Co	9.93	17.76	15.00	2.92	4.50	59.26	5.38	4.50	4.75
1	Wirthmore Pltry. Mash. (all grain)	Chas. M. Cox Co	9.30	14.54	12.00	2.97	3.00	60.06	9.50	9.50	3.63
6	Wirthmore Poultry Mash (fish and scrap)	Chas. M. Cox Co	9.54	19.45	17.00	3.58	4.00	52.65	6.66	9.50	8.12
2	Elmore Egg Mash	Elmore Milling Co	8.97	19.36	18.00	5.00	4.00	52.81	7.21	8.00	6.65
1	Garland's Poultry Mash	J. B. Garland & Son	10.12	24.71	23.00	4.91	4.00	43.44	9.12	8.00	7.70
2	First Feed for Baby Chicks	Greene Chick Feed Co	8.58	17.00	17.00	4.69	3.00	48.74	3.77	5.00	17.22
2	Growing Feed	Greene Chick Feed Co	8.57	13.83	12.00	5.52	3.00	51.24	5.21	5.00	15.63
2	Meat Mash	Greene Chick Feed Co	6.98	10.94	12.00	3.85	3.00	37.81	11.65	7.00	28.77
2	Red Comb Meat Mash	Hales & Edwards Co	9.64	15.37	15.00	3.47	4.00	56.54	6.26	8.00	8.72
2	Purity Growing Feed	Wm. S. Hills Co	7.90	18.74	19.00	6.59	6.00	52.43	4.86	9.00	9.48
2	Purity Poultry Mash	Wm. S. Hills Co	7.78	19.68	17.00	6.20	4.00	47.93	7.09	10.00	11.32
4	H-O Poultry Feed	H-O Co	9.18	17.06	17.00	4.63	4.50	58.99	6.45	9.00	3.69
1	H-O Dry Mash	H-O Co	8.83	18.13	18.00	3.43	3.50	54.54	10.77	9.00	4.30
2	Mansfield Dry Mash	Mansfield Milling Co	8.72	24.57	22.00	5.28	6.00	53.48	6.68	7.00	8.23
1	Domino Growing Mash	Nowak Milling Corp	9.50	16.50	15.00	5.13	5.00	58.55	6.45	7.00	3.87
1	Lay-Eg-O-Laying Mash	Nowak Milling Corp	6.70	13.42	12.00	3.02	3.00	46.09	5.39	4.00	25.38
2	Growing Feed	Park & Pollard Co	10.05	15.46	10.00	3.70	1.50	58.53	5.36	8.00	6.90
4	Lay or Bust Dry Mash	Park & Pollard Co	9.46	20.31	18.00	4.30	1.50	48.29	8.44	12.00	9.20
1	Champion Growing Feed	Arthur E. Pratt Co	8.12	13.43	12.00	2.61	2.00	50.38	5.46	4.00	20.00
2	Pratt's Baby Chick Food	Pratt Food Co	10.15	12.80	12.00	4.60	4.50	61.27	2.69	3.00	8.49
1	American Poultry Feed	Quaker Oats Co	9.75	13.99	12.00	4.81	3.50	63.62	4.71	8.00	3.12

COMPLETE AVERAGE ANALYSIS AND GUARANTEE OF ALL FEEDS COLLECTED—(*Continued*)

No. Samples	Foodstuffs	Name of Manufacturer	Water	Protein		Fat		Nitrogen free extract	Fiber		Ash
				Found	Guar.	Found	Guar.		Found	Guar.	
	Poultry Feeds—(*Continued*)										
3	Schumacher Poultry Mash	Quaker Oats Co.	7.29	21.88	17.50	5.02	4.00	52.80	8.30	10.00	4.71
3	Chicken Chowder	Ralston Purina Co.	8.84	18.96	19.00	4.33	4.00	53.76	7.04	9.00	7.07
1	Wyandotte Mash Feed	Ross Bros. Co.	8.63	16.55	16.00	4.79	3.50	52.44	11.76	10.50	5.83
1	Savage's Meat Cereal	G. T. Savage Poultry Supply Co.	8.80	15.31	11.50	4.47	3.50	56.15	10.00	9.32	5.27
1	Savage's Growing Feed	G. T. Savage Poultry Supply Co.	7.40	15.44	11.50	5.43	3.50	58.68	6.95	9.32	6.10
1	Shredded Wheat Waste	Shredded Wheat Co.	8.80	10.90	—	1.38	—	75.32	2.02	—	1.58
2	Syragold Dry Mash	Syracuse Milling Co.	7.03	13.09	12.00	3.14	3.00	43.44	4.90	5.00	28.40
1	Tioga Laying Food	Tioga Mill & Elevator Co.	8.27	16.69	16.00	3.63	2.50	48.09	4.67	6.00	18.65

REVIEW OF THE ANALYTICAL WORK

The preceding tables give the average analyses of samples collected and not the analyses of individual samples, as formerly. To economize space, the statement of certified ingredients is also omitted. With the exception of wheat bran and local mixtures of poultry feeds, all analyses made are included in the averages.

Cottonseed Meal. The analyses of cottonseed meals reported show a tendency on the part of the cottonseed crushers to still further lower the protein content of the meal, through the addition of ground hulls. More meals than formerly are found with a 36 and 38 per cent guarantee. This condition will probably continue until normal times return and consumers insist upon a higher grade product. The two samples of Dirigo Cottonseed Feed sold by W. Newton Smith and reported under the heading of cottonseed feed, were sold by that jobber as cottonseed meal. One sample collected in the eastern part of the State was made the basis of prosecution. The other was collected of a large consumer in the Connecticut Valley who purchased a carload of this product as cottonseed meal. A Federal sample was taken of this shipment and action is still pending.

Linseed Meal. The linseed meals put out by the Toledo Seed & Oil Co. and the Waver-Ryan Co. were noticeably lower in protein than those put out by other firms, possibly due to the quality of seed used. Linseed meal, together with cottonseed meal, is relatively cheap at the present time.

Miscellaneous Oil Cakes include Homcoline, a corn germ product, and three products sold by the Oil Seeds Co. Of the latter the two grades of peanut oil cake were of excellent quality. These were evidently derived from peanut kernels without an admixture of peanut shells, and are a valuable protein feed. The use of the peanut for its oil is increasing rapidly, and it is understood that the general practice is to crush kernel and shell together. The residue from this process does not make as satisfactory a feed, because of the inferior nutritive value of the shell, as the products reported.

The analyses of peanut oil cakes examined, as compared with three analyses of whole peanuts, follow:

	Peanut Oil Cake			Whole Peanuts Including Shells		
	Alpha Brand	Beta Brand	Some Shells	Raw	Roasted	Roasted
	%	%	%	%	%	%
Water	8.37	6.64	6.68	5.94	2.13	2.20
Protein	41.33	31.86	35.51	20.11	20.76	19.68
Fat	10.74	12.14	10.85	36.73	36.36	37.27
Nitrogen-free extract	30.12	36.60	21.40	14.41	15.38	15.18
Fiber	4.13	8.42	21.71	20.90	23.31	23.55
Ash	5.31	4.34	3.85	1.91	2.06	2.12

Sesame Oil Meal is derived from an Asiatic oil-bearing seed. It is rich in protein and highly digestible. The analysis follows:

Water	6.33%
Protein	41.64%
Fat	15.41%
Nitrogen-free extract	20.86%
Fiber	4.00%
Ash	11.72%

Gluten Meal and the Gluten Feeds were of the usual good quality, and form one of the cheapest of our protein dairy feeds.

Distillers' Grains were extensively offered during the past season. Owing to the suspension of all distilleries as a war measure, they will not be found to any extent in the future, although manufacturers of mixed rations undoubtedly have a large supply on hand for use in their products.

Brewers' Grains. There is considerable variation in the protein content of brewers' grains, due in part to the varying proportions of different grains used in brewing and to the treatment to which it is subjected. The eight samples sold by the Farmers Feed Co. maintained a high average. Brewers' grains serve as a satisfactory component of the grain ration for cows and horses.

Yeast and Vinegar Grains are the residue remaining from various mixtures of cereals and cereal products after the manufacture of yeast or malt vinegar. Formerly much of this material was exported. They have about the same feeding value as malt sprouts.

Wheat By-Products, Middlings, Mixed Feed and Bran were of the usual quality. Most of the brands were guaranteed as containing screenings "not exceeding mill run". This appears to be a rather elastic term, which at times admits screenings in considerable quantities. Preference should be given to those brands free from screenings or containing a minimum amount. Screenings, even when finely ground, can be readily detected by the dark color of the feed and by characteristic odor, due to the weed seeds in the screenings. If the consumer will discriminate against material containing an excessive amount of screenings, he will be of great aid in preventing an excessive admixture.

The **Durum** or **macaroni wheat products**, of which samples of middlings and bran are reported, contain rather less protein and more fat and fiber than do other varieties of wheat.

Dairy Feeds (mixed rations), as here classified, are intended as complete grain rations for dairy animals. In general they comply with the requirements of such a ration. Unless manufacturers are well stocked with the various ingredients entering into these mixtures, it will probably be necessary to modify formulas during the coming season. This is particularly true where distillers' grains form an important part of the mixture. The samples of Stevens 44 Ration collected early in the season showed a tendency to run considerably above their maximum fiber guarantee, a condition to which attention was called, and which was found to be corrected in later samples. Ropes Horse Feed is placed under this heading for the lack of a better place to put it.

Molasses Feeds (containing over 15 per cent protein). These feeds were of usual quality. Many of them carry a considerable amount of screenings, clipped oat by-product and other material which in itself would not be readily salable, but which after regrinding and treating with molasses forms a fairly attractive article.

Hominy Feed, in accordance with the definition given by the Association of Feed Control Officials, "Is a mixture of the bran coating, the germ and a part of the starchy portion of the corn kernel obtained in the manufacture of hominy grits for human consumption." In reality it may conform to the above definition, it may contain none of the germ, or it may contain the germ after removal of the oil. These variations do not, however, materially change the feeding value. If hominy feed contains a considerable amount of the fat extracted corn germ, the color is somewhat darker than for meal in which the germ is lacking. Hominy feed is made from white corn. A product of similar composition is made from yellow corn in the manufacture of table meal. Hominy meal is fully equal, if not slightly superior, to corn in feeding value.

Stock and Horse Feeds. The usual basis of these feeds is oat feed, a by-product consisting of large amounts of oat hulls resulting from the manufacture of cereal breakfast foods. Many individual samples of stock feed exceeded their fiber guarantees, due probably to an effort to use maximum amounts of oat feed. A particularly inferior feed was found in Greene's Stock Feed, which ran noticeably low in protein and high in fiber. As the dealer had only a few sacks in stock, and as it is not widely distributed, no action was taken other than calling the dealer's attention to the quality of the goods.

Molasses Feeds (containing less than 15 per cent protein). Many of these feeds contain cut or ground alfalfa as a base. The chief advantages of using alfalfa in this form are convenience in handling and shipping. On the other hand, the quality of the alfalfa used may be disguised by grinding and the purchaser pays grain prices for what is really a roughage.

Xtra-Vim Feed is a mixture of molasses and sphagnum moss. The chief value of the moss is as a distributor for the molasses.

Poultry Feeds. Only such feeds as were offered for sale in places other than where mixed are reported. In addition many local mixtures were collected and analyzed, and found to be of much the same quality as in previous years.

Information relative to special feeds not reported will be sent to those interested.

ANIMAL PRODUCTS (MEAT)

Manufacturer or Jobber, Brand and Retailer	Sampled at:	Protein		Fat		Phosphoric Acid	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
American Agric. Chem. Co., Boston, Mass.							
A. A.........W. E. Bryant & Co............	Brockton....	50.32	45.00	12.18	10.00	9.62	
Protox.......A. J. Carr.....................	Northboro...	56.43	55.00	13.07	10.00	6.25	
Butchers Rendering Co., Fall River, Mass.							
Mackenzie & Winslow.........	Fall River...	75.74	60.00	11.53	10.00	2.88	
I. Morton & Co...............	Plymouth...	73.55	60.00	10.56	10.00	3.37	
J. Breck & Sons, Boston, Mass.							
M. H. Rolfe Est...............	Newburyport	44.88	43.00	20.17	12.00	8.80	
Owen Coogan & Sons, Pittsfield, Mass.							
North Adams Flour & Grain Co.	Lee.........	48.29	45.00	26.82	10.00	3.27	
Dewey Bros. Co., Blanchester, Ohio							
Tankage.... I. J. Rowell..................	Pepperell....	60.89	60.00	12.71	8.00	5.20	
Whitman & Pratt Rendering Co., Boston							
M. G. Williams................	Raynham...	48.69	45.00	10.53	10.00	9.77	

ANIMAL PRODUCTS (MEAT AND BONE)

American Agric. Chem. Co., Boston, Mass.							
A. A.........W. E. Bryant & Co............	Brockton....	50.47	45.00	12.22	10.00	10.36	
A. A.........H. W. Kimball.................	Westboro...	47.72	45.00	11.65	10.00	11.35	
E. A. Cowee Co., Worcester, Mass.							
E. A. Cowee Co...............	Jefferson.....	35.20	35.00	11.91	9.00	15.69	
John C. Dow Co., Boston, Mass.							
J. Cushing & Co...............	Ayer........	31.49	30.00	10.68	10.00	13.65	
Greene Chicken Feed Co., Marblehead, Mass.							
G. W. Reynolds & Son.........	Chelsea.....	37.74	35.00	9.83	5.00	14.75	
J. Cushing & Co...............	Fitchburg...	32.49	35.00	9.29	5.00	14.62	
Home Soap Co., Worcester, Mass.							
Geo. F. Wetherbee Co..........	Gardner.....	37.70	40.00	16.75	12.00	14.41	
Lowell Fertilizer Co., Boston, Mass.							
J. Cushing & Co...............	New Bedford	45.00	40.00	10.17	8.00	13.44	
Winslow & Mackenzie Co.......	New Bedford	47.89	40.00	10.63	8.00	11.94	
I. Morton & Co...............	Plymouth...	42.97	40.00	9.20	8.00	15.21	
Geo. E. Marsh Co., Lynn, Mass.							
Meat Meal..Taunton Grain Co.............	Taunton....	39.03	36.00	7.58	12.00	16.12	
Scraps......Hingham Grain Mill, Inc.......	Hingham....	41.68	40.00	12.34	10.00	10.82	
Scraps......C. P. Washburn...............	Middleboro..	43.35	40.00	11.30	10.00	12.25	
Scraps......C. G. Jordan..................	Weymouth..	44.02	40.00	9.67	10.00	12.42	
James F. Morse Co., Boston, Mass.							
Sumner, Crosby & Son.........	Boston......	43.40	40.00	15.60	10.00	12.40	
F. A. Fales & Co..............	Norwood....	39.60	40.00	13.12	10.00	12.45	
Portland Rendering Co., Portland, Me.							
M. H. Rolfe Est................	Newburyport	38.58	40.00	11.41	8.00	16.20	
C. M. Shay Co., Groton, Conn.							
W. N. Potters Sons & Co.......	Hadley......	45.22	40.00	12.08	10.00	11.99	
Whitman & Pratt Rend'g Co., Lowell, Mass.							
Meat Meal.. A. Dodge & Son Corp.........	Beverly.....	32.14	33.00	11.00	10.00	16.74	
Scraps......J. W. Doon & Son.............	Natick......	39.96	45.00	9.92	10.00	14.57	
Scraps......E. E. Tarbell.................	Pepperell....	42.60	45.00	12.63	10.00	12.60	
Worcester Rendering Co., Auburn, Mass.							
Royal Worcester..F. F. Woodward Co......	Fitchburg...	46.35	40.00	12.00	8.00	12.17	

ANIMAL PRODUCTS (BONE)

Manufacturer or Jobber, Brand and Retailer	Sampled at:	Protein		Fat		Phosphoric Acid	
		Found	Guar.	Found	Guar.	Found	Guar.
		%	%	%	%	%	%
American Agric. Chem. Co., Boston, Mass.							
H. W. Kimball	Westboro	15.66	—	6.84	—	—	—
John C. Dow Co., Boston, Mass.							
W. B. Herrick	Beverly	12.76	12.00	5.00	6.00	—	—
Portland Rendering Co., Portland, Me.							
M. H. Rolfe Est.	Newburyport	23.21	23.00	5.54	5.00	—	—
Worcester Rendering Co., Auburn, Mass.							
Geo. F. Wetherbee Co.	Gardner	25.88	20.00	6.68	5.00	—	—

FISH MEAL

Manufacturer or Jobber, Brand and Retailer	Sampled at:	Protein Found	Protein Guar.	Fat Found	Fat Guar.	Phosphoric Acid Found	Phosphoric Acid Guar.
Burnham & Morrill Co., Portland, Me.							
Knight Grain Co.	Newburyport	51.21	60.00	1.76	1.50	—	—
International Glue Co., Boston, Mass.							
Red Star....Mansfield Coal & Grain Co.	Mansfield	44.62	45.00	2.62	2.00	—	—
Red Star....Winslow & Mackenzie Co.	New Bedford	51.49	45.00	1.28	2.00	—	—
Russia Cement Co., Gloucester, Mass.							
Chic-Chuk.A. F. Sanctuary	Amherst	58.51	50.00	1.83	2.00	—	—
Chic-Chuk.Geo. F. Wetherbee Co.	Gardner	51.74	50.00	1.59	2.00	—	—
Chic-Chuk.D. B. Hodgkins Sons	Gloucester	51.70	50.00	1.60	2.00	—	—
Chic-Chuk.A. P. Ames & Co.	Peabody	52.78	50.00	1.56	2.00	—	—

Animal Products (Meat and Meat and Bone)

Meat Scraps and Meat and Bone Meals have been classified in accordance with the following definitions, as advocated by the Association of Feed Control Officials. It is hoped that manufacturers will in the future be guided by these definitions in naming their products.

" **Meat Scrap and Meat Meal** are the ground residues from animal tissues, exclusive of hoof and horn. If they contain more than 10 per cent of phosphoric acid they must be designated **Meat and Bone Scrap,** and **Meat and Bone Meal.** If they bear a name descriptive of their kind, composition or origin, they must correspond thereto."

"Digester Tankage is the residue from animal tissue, exclusive of hoof and horn, specially prepared for feeding purposes, by tanking under live steam, drying under high heat, and suitable grinding. If it contains more than 10 per cent of phosphoric acid it must be designated **Digester Meat and Bone Tankage.**"

If this definition is followed a large number of the samples collected cannot be considered as meat products, although many were sold as such.

Fish Meal. The Red Star Brand, manufactured by the International Glue Co., and the Chic-Chuk, manufactured by the Russia Cement Co., are residues after the extraction of glue from fish. Chic-Chuk is derived from fish skins and back bones, together with such flesh as is not removed in making boneless fish products from salted and cured cod and hake. This material is first thoroughly washed to remove the greater part of the salt, the glue is then extracted by cooking and pressing, and the residue dried and ground to be used either as Chic-Chuk or fertilizer, depending upon the quality of the original stock, the better grades being used for poultry food. It must of necessity contain a high percentage of bone. The manufacturers claim that it does not taint eggs and poultry, as does meal made from the waste of mackerel and herring and other oil-bearing fish.

THE GRAIN PROBLEM

By J. B. Lindsey

Purchased grain is one of the most important items affecting the cost of producing milk, young stock, horses or poultry. In these days of abnormal prices, the feeder of any kind of live stock should know so far as possible the relative values of all grains and by-products available for feeding purposes. In this article I wish to speak of the relative values of different grains, by-products and proprietary mixtures for the production of milk.

A. GRAINS AND BY-PRODUCTS

The dairy cow is fed first to maintain her body weight and second to produce milk. If she receives only sufficient food to maintain her weight, she cannot yield milk unless temporarily she takes the fat and flesh from her body for the purpose.

Why Grain is Needed. For both economical and physiological reasons, a considerable portion of the daily ration should be composed of roughage because such materials are easily and cheaply produced on the farm and because the digestive tract of the bovine is particularly suited to utilize them.

Most of the home-grown coarse feeds, however, are quite high in carbohydrates (starchy matter), low in protein, and have a relatively low digestibility. It is necessary, therefore, to supplement them with the cereal grains which, though low in protein, are very digestible, and, to an extent, with the concentrated by-products which in addition to a high digestibility are quite rich in protein. In other words, if roughage alone is fed, one secures bulk, but not enough digestible or actual food material and not sufficient protein; or, stated in another way, grain is fed to supply the necessary digestible matter and protein lacking in the roughage.

Feeds on the Market. The farmer finds upon the market the cereal grains, oil seed residues, by-products from milling, starch, sugar and fermentation industries as well as many proprietary feeds made from them, and frequently he is at a loss to know what to purchase.

The Most Suitable Feeds. It is the belief of the writer that as a rule it is more economical for the farmer to buy the staple grains and the various by-products and mix his own rations than to purchase proprietary mixtures. Exceptions to this rule may occur.

If he buys feeds chiefly for their protein, those richest in that ingredient are usually the cheapest. If he purchases feeds primarily for their content of digestible matter, the cereal grains are, as a rule, the more economical. Between these two groups there are many feeds that have a fair amount of protein and are quite high in digestibility.

Relative Values of Feeds. The best way known for measuring the relative values of cattle feeds is the **net heat** or **energy method.** The entire amount of heat or energy contained in a feed is termed its **total heat** or **energy value.** All of this energy cannot be used by the animal, portions being lost in the form of fæces, urine, in the heat radiation as a result of work required in chewing, digestion and assimilation and thru the influence of certain feeds in stimulating the metabolism. These several losses, expressed as energy (calories), deducted from the total energy, leaves the **net heat or available energy values.**

Here follows a list of feedstuffs showing their percentages of digestible protein and their relative values, corn meal being used as 100 for convenience of comparison:*

(a) CEREALS

	Digestible Protein (Per Cent)	Relative Net Energy Values
Corn Meal	6.9	100
Barley	9.0	105
Buckwheat	8.1	70
Corn-and-Cob Meal	6.1	89
Oats	9.7	79
Rye	9.9	110
Wheat	9.2	107

(b) OIL SEED RESIDUES

Cocoanut Meal	18.8	98
Cottonseed Meal	33.4	105
Germ Oil Meal (from corn)	16.5	98
Linseed Meal (new process)	31.7	100
Linseed Meal (old process)	30.2	104

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* Adapted from Bul. 142, Penn. Experiment Station, by H. P. Armsby.

	Digestible Protein (Per Cent)	Relative Net Energy Values
Palmnut Cake or Meal	12.4	110
Peanut Cake (from shelled nuts)	42.8	109
Peanut Cake (plus hulls)	20.2	50
Soy Bean Meal (fat extracted)	38.1	117
(c) MILLING RESIDUES		
Buckwheat Bran	10.5	36
Buckwheat Middlings	24.6	84
Rye Feed	12.2	93
Wheat Bran	12.5	62
Wheat Middlings (standard)	13.4	69
Wheat Middlings (flour)	15.7	88
Hominy Feed	7.0	104
(d) STARCH AND SUGAR RESIDUES		
Gluten Feed	21.6	94
Gluten Meal	34.8	98
Molasses (beet)	1.1	67
Molasses (cane—black strap)	1.0	65
Beet Pulp (dried)	4.6	89
(e) FERMENTATION RESIDUES		
Brewers' Grains (dried)	21.5	62
Brewers' Grains (wet)	4.6	17
Distillers' Grains (dried) from corn	22.4	100
Distillers' Grains (dried) from rye	13.6	66
Malt Sprouts	20.3	85

The above relative values must not be construed too exactly as the data on which they are used are not sufficient to warrant it, but they should prove helpful as guides in purchasing. They do not mean that the feed with the highest amount of digestible protein or with the highest relative number should be used exclusively as a grain ration, for it is known that a mixture of several articles, some rich in starch and others rich in protein, is to be preferred in order to supply the necessary amount of both of these ingredients to "balance" the ration.

The figures show that the cereals barley, rye and wheat have substantially equal feeding or energy values, and are a little superior to corn, while buckwheat and oats fall noticeably below them. Corn and barley seem from practical experience to be more satisfactory and economical than either rye or wheat.

Most of the oil seed residues have about equal energy values and substantially the same energy values as do the cereals. They furnish, however, decidedly more protein and hence would be selected in place of the cereals when protein was needed.

The milling residues vary in energy value among themselves, flour middlings and rye feed approaching the cereals in energy value with hominy showing a full equality. Wheat bran is decidedly below the others, but has its place because of its bulk and laxative effect upon the animal.

Of the starch and sugar residues, the glutens approximate the cereals in energy value and also furnish a large amount of protein; dried beet pulp has rather less value than the cereals, although its mechanical condition and ability to absorb water give it a special value for milk production; molasses is shown to have about two-thirds of the energy value of the cereals.

In case of the fermentation residues, brewers' grains appear equal to wheat bran in energy although they have considerably more protein; while corn distillers' grains have a high percentage of digestible protein, and furnish as much energy as the cereals.

How to Use the Relative Values. As an aid in purchasing, note the relative energy number. If corn meal costs $70 a ton, and hominy feed $55, the dairyman should purchase the latter in accordance with the rule of simple proportion:

Corn		Hominy		Corn		Hominy	
100	:	104	: :	$70	:	X	=$72.80

That is, hominy would be worth $72.80 and could be bought for $55. If corn costs $50 a ton, what is molasses worth?

Corn		Molasses		Corn		Molasses	
100	:	65	: :	$50	:	X	=$32.50

and if molasses costs much more than $32.50 it is an expensive source of nutrition.

B. PROPRIETARY MIXTURES

Data are not available on which to base any net energy values for the proprietary mixtures.

Such mixtures may be divided into two classes, (a) the ready rations containing from 15 to 26 per cent of protein and (b) the great variety of stock and horse feeds with less than 15 per cent protein.

In order to get at their approximate values I would make the following suggestions. First note their guarantees and if it is desired to use them as a complete ration, buy those having at least 18 per cent of total protein and the least amount of fiber. Note also the price as compared with a ration that you can prepare from the standard articles in the local markets.

If stock and horse feeds are desired, buy one of those which is free from a musty odor and which has the least percentage of fiber. Most of these mixtures contain oat and other grain hulls, and some contain ground weed seeds, the hulls of which are quite tough and indigestible. The higher the percentage of fiber such feeds show, the larger the amount of grain hulls and the like they contain.

AVERAGE ANALYSES AND RETAIL PRICES OF UNMIXED BY-PRODUCTS

[September—April]

Feedstuffs	Year	No. samples	Protein	Fat	Fiber	Price a ton
			%	%	%	
Cottonseed Meal, choice	1914	16	42.23	7.87	7.84	$36.25
Cottonseed Meal, choice	1915	35	42.90	7.96	8.48	33.16
Cottonseed Meal, choice	1916	18	42.61	7.94	8.47	39.50
Cottonseed Meal, choice	1917	2	42.36	8.22	8.39	53.00
Cottonseed Meal, prime and good	1914	34	39.26	7.50	10.09	$36.13
Cottonseed Meal, prime and good	1915	35	39.57	7.40	10.02	33.81
Cottonseed Meal, prime and good	1916	54	38.78	6.87	11.13	38.79
Cottonseed Meal, prime and good	1917	77	38.18	6.95	11.52	46.45
Cottonseed Meal, all samples	1914	50	40.21	7.62	9.37	$36.17
Cottonseed Meal, all samples	1915	70	41.23	7.68	9.56	33.48
Cottonseed Meal, all samples	1916	72	39.74	7.14	10.46	38.96
Cottonseed Meal, all samples	1917	79	38.28	6.98	11.73	46.63
Linseed Meal, new process	1914	2	36.47	3.77	8.61	$38.50
Linseed Meal, new process	1915	7	37.05	2.61	8.75	39.00
Linseed Meal, new process	1916	11	38.20	2.82	8.50	43.11
Linseed Meal, new process	1917	1	38.61	2.40	8.15	—
Linseed Meal, old process	1914	25	33.63	6.98	8.93	$38.02
Linseed Meal, old process	1915	22	35.35	6.48	7.86	38.70
Linseed Meal, old process	1916	27	33.80	6.04	8.08	43.45
Linseed Meal, old process	1917	35	34.28	6.65	7.88	48.52
Gluten Meal	1914	11	41.35	1.40	2.28	$37.00
Gluten Meal	1915	10	45.85	1.34	1.10	37.30
Gluten Meal	1916	11	45.24	1.15	1.30	37.80
Gluten Meal	1917	10	42.66	0.98	1.79	47.50
Gluten Feed	1914	36	24.94	2.86	6.68	$33.11
Gluten Feed	1915	22	26.50	2.73	6.25	33.71
Gluten Feed	1916	27	26.37	2.94	6.68	32.87
Gluten Feed	1917	34	25.42	2.49	7.45	40.84
Distillers Grains, largely corn	1914	26	31.28	10.44	10.51	$34.93
Distillers Grains, largely corn	1915	20	30.86	10.55	10.74	35.39
Distillers Grains, largely corn	1916	20	30.58	10.26	10.38	35.64
Distillers Grains, largely corn	1917	31	31.78	9.50	11.88	41.33
Malt Sprouts	1914	8	26.62	1.28	12.47	$27.21
Malt Sprouts	1915	3	24.14	1.17	14.24	30.00
Malt Sprouts	1916	3	26.77	1.15	12.15	28.00
Malt Sprouts	1917	2	24.22	1.78	14.20	35.50
Brewers Grains	1914	10	29.13	6.12	12.35	$29.43
Brewers Grains	1915	17	28.87	6.48	13.28	30.50
Brewers Grains	1916	21	27.98	6.88	13.43	30.44
Brewers Grains	1917	26	26.81	6.68	13.99	35.13
Yeast and Vinegar Grains	1916	4	20.00	7.18	17.69	$26.00
Yeast and Vinegar Grains	1917	12	19.72	6.89	17.60	34.45
Red Dog Flour	1915	5	19.46	5.21	2.79	$37.00
Red Dog Flour	1916	10	17.23	4.55	2.57	37.30
Red Dog Flour	1917	19	17.22	4.65	2.48	48.82
Wheat Middlings	1914	59	17.84	5.28	6.25	$32.07
Wheat Middlings	1915	58	17.70	5.14	6.43	33.31
Wheat Middlings	1916	73	16.36	5.42	6.55	31.06
Wheat Middlings	1917	67	16.32	5.08	7.38	40.74
Wheat Mixed Feed	1914	115	17.21	4.79	7.14	$30.52
Wheat Mixed Feed	1915	110	17.29	4.87	7.51	32.38
Wheat Mixed Feed	1916	134	16.10	4.88	7.23	30.92
Wheat Mixed Feed	1917	100	16.06	4.79	7.43	38.48
Wheat Bran	1914	54	16.47	4.95	9.48	$28.23
Wheat Bran	1915	72	16.33	4.67	9.64	30.33
Wheat Bran	1916	85	15.43	4.95	9.62	28.26
Wheat Bran	1917	72	15.20	4.81	9.87	35.73
Corn Meal	1914	47	9.47	3.58	2.22	$33.58
Corn Meal	1915	31	9.28	3.47	2.06	34.81
Corn Meal	1916	15	9.00	3.52	1.90	34.60
Corn Meal	1917	14	9.32	3.45	2.21	45.71
Hominy Feed	1914	62	11.27	6.96	4.23	$32.91
Hominy Feed	1915	67	11.16	7.65	4.39	33.19
Hominy Feed	1916	73	11.14	7.20	4.33	34.16
Hominy Feed	1917	72	11.17	6.55	4.61	44.48

MARKET PRICES OF COMMERCIAL FEEDSTUFFS FOR 1916-1917

FEEDSTUFFS	Average Monthly Wholesale Ton Prices—1916-1917												Average
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	
Cottonseed Meal	$37.76	$39.13	$44.95	$45.63	$43.75	$42.82	$43.07	$44.81	$45.25	$48.43	$50.38	$52.70	$44.89
Linseed Meal (N. P. & O. P.)	38.50	44.50	44.90	48.38	48.70	47.50	46.06	46.31	48.95	48.88	50.38	53.38	47.20
Gluten Feed (sacked)	31.78	33.45	40.63	41.29	41.03	42.52	43.32	44.08	47.92	45.23	48.29	57.88	43.12
Gluten Feed (bulk)	29.58	33.77	38.52	38.33	38.39	40.41	40.53	43.66	45.33	42.36	47.13	54.13	41.01
Distillers' Dried Grains	—	—	—	—	—	—	—	—	—	—	—	—	—
Flour Middlings (Red Dog)	36.42	39.50	44.90	47.75	48.20	48.88	47.13	49.38	51.15	52.56	56.88	61.42	48.68
Standard Middlings	28.96	32.79	38.35	35.50	37.65	40.32	41.44	45.13	43.70	38.44	43.94	61.70	40.66
Mixed Feed	29.21	32.44	36.80	37.43	38.53	41.44	41.78	47.63	46.55	42.22	44.75	47.50	40.52
Bran—Spring	26.00	29.25	32.05	30.94	35.39	39.26	41.44	44.00	40.70	32.50	34.13	37.10	35.23
Bran—Winter	26.50	29.78	32.90	31.38	35.79	39.67	41.25	44.32	41.00	32.97	34.69	37.60	35.65
Hominy Meal (sacked)	35.68	36.55	43.59	43.99	43.70	44.65	47.28	53.40	59.70	54.05	57.90	67.20	48.97
Hominy Meal (bulk)	34.04	35.60	41.98	40.90	41.60	42.21	44.60	51.73	55.78	52.07	54.98	57.32	46.07
Corn Meal	38.26	39.40	44.60	41.70	43.80	45.60	48.60	57.40	65.80	66.80	76.80	82.80	54.30
Corn, No. 2—Yellow	35.71	37.50	40.71	40.00	42.14	42.32	46.07	55.35	63.21	65.35	75.35	77.85	51.80
Oats, No. 2—Clipped White	35.63	37.19	40.63	40.25	43.75	49.38	48.75	50.00	50.00	47.50	54.38	57.50	46.25
Rye, No. 2	47.49	49.99	57.49	57.14	—	—	—	—	—	—	—	—	53.03
Feed Barley (standard)	37.92	40.63	45.00	48.13	51.05	52.71	55.21	59.80	64.80	63.13	61.25	63.55	53.60
Hay, No. 1—Large bales	19.63	19.50	20.20	20.13	20.25	20.69	14.76	20.07	21.38	22.65	19.50	20.70	19.96
Hay, No. 2—Large bales	17.50	16.38	17.75	17.50	17.32	17.94	16.88	17.00	19.30	18.92	15.94	17.60	17.50
Hay, No. 1—Clover mixed	14.34	14.50	15.10	15.44	15.45	15.50	14.50	14.38	14.44	14.63	13.07	14.07	14.62
Straw—Choice Rye	13.39	13.09	13.25	12.75	12.50	13.28	14.00	13.32	14.05	16.13	14.48	14.30	13.71
Straw—Oat	8.50	9.07	9.75	9.75	9.50	10.32	10.44	10.00	10.25	10.50	9.50	9.50	9.76

CONTROL SERIES. BULLETIN NO. 8. DECEMBER, 1917

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

INSPECTION OF Commercial Fertilizers

BY

H. D. HASKINS, L. S. WALKER, W. A. ALLEN
and R. S. SCULL.

In this bulletin will be found the results of the fertilizer inspection for 1917. The first portion of the bulletin records the names of the 100 manufacturers, and of each of the 512 brands registered. Following this is a brief description of the method of sampling, number of sacks sampled and of analyses made. A table shows the wholesale ton quotations for the six months preceding March 1, of raw materials and chemicals, and also the retail prices at which such materials were offered by manufacturers.

The chemical character of the raw materials, as well as of mixed fertilizers and superphosphates, is discussed, and mention is made of the firms whose products fell below the guarantee.

The quality of the nitrogen, phosphoric acid and potash contained in fertilizer mixtures is explained, and particular attention is called to those brands containing an inferior grade of organic nitrogen.

Some forty pages of the bulletin are devoted to the tables of analyses, showing in detail the exact composition of each brand found on sale in this State.

Requests for bulletins should be addressed to the
AGRICULTURAL EXPERIMENT STATION,
AMHERST, MASS.

DEPARTMENT OF CHEMISTRY.

J. B. Lindsey, *Chemist.*

INSPECTION OF COMMERCIAL FERTILIZERS

FOR THE SEASON OF 1917.

By H. D. Haskins, *Chemist in Charge.*
Assisted by
L. S. Walker, W. A. Allen and R. S. Scull.

MANUFACTURERS AND BRANDS. During the season of 1917, 100 manufacturers, importers and dealers, including the various branches of the American Agricultural Chemical Company have secured certificates for the sale of 512 brands of fertilizer, fertilizing materials and agricultural limes in the markets of Massachusetts. They may be classed as follows:

Complete fertilizers	175
Ammoniated superphosphates	182
Ground bone, tankage and dry ground fish	54
Wood ashes	4
Chemicals and organic nitrogen compounds	65
Agricultural limes	32
	512

Following is an alphabetical list of those who have registered fertilizers and lime compounds for sale in the State during the season, together with the brands registered by each.

W. H. Abbott, Holyoke, Mass.

Animal Fertilizer,
Eagle Brand Fertilizer.

Alphano Humus Co., Whitehall Building, New York, N. Y.

Prepared Alphano Humus.

American Agricultural Chemical Co., 92 State St., Boston, Mass.

AA Potato Grower,
Ammoniated Fertilizer A,
Ammoniated Fertilizer AA,
Ammoniated Fertilizer AAA,
Ammoniated Fertilizer AAAA,
Ammoniated Fertilizer VX,
Basic Lime Phosphate,
Blood Tankage,
Castor Pomace,
Cereal and Root Fertilizer,
Complete Tobacco Manure without Potash,

Dry Ground Fish,
Extra Quality Potato Manure,
Fine Ground Bone,
Fine Ground Nova Scotia Plaster,
Grain and Seeding Fertilizer,
Grass and Lawn Top Dressing, 1916,
Ground Tankage (4.94% Nitrogen),
Ground Tankage (7.41% Nitrogen),
Ground Untreated Phosphate Rock,
High Grade Dried Blood,
High Grade Fertilizer, 1916,
High Grade Grass Top Dressing without Potash,
Nitrate of Soda,
Odorless Grass and Lawn Top Dressing without Potash,
Plain Superphosphate (14%),
Plain Superphosphate (16%),
Pulverized Sheep Manure,
Special Grass and Garden Mixture, 1916,
Special Vegetable Fertilizer,
Sulphate of Ammonia,
Thomas Phosphate Powder (Basic Slag),
Top Dresser, 1916,
Valley Special Complete Fertilizer, 1916,
Bradley's Complete Manure for Corn and Grain, 1916,
Bradley's Complete Manure for Potatoes and Vegetables, 1916,
Bradley's Complete Manure for Top Dressing Grass and Grain, 1916,
Bradley's Corn Phosphate, 1916,
Bradley's Eclipse Phosphate, 1916,
Bradley's Extra Potato and Root Special,
Bradley's General Fertilizer,
Bradley's Grain Fertilizer,
Bradley's Grass Top Dressing without Potash,
Bradley's Maine Potato Special,
Bradley's Northland Potato Grower,
Bradley's Potato Fertilizer, 1916,
Bradley's Potato Manure, 1916,
Bradley's Root Crop Manure,
Bradley's Special Corn Phosphate without Potash,
Bradley's Special Niagara Phosphate,
Bradley's Special Potato Fertilizer without Potash,
Bradley's Special Potato Manure without Potash,
Bradley's Special XL Superphosphate without Potash,
Bradley's Triplex Potato Special,
Bradley's Universal Crop Phosphate,
Bradley's XL Superphosphate of Lime, 1916,
Breck's Special Lawn and Garden Dressing without Potash,
Breck's Special Market Garden Manure without Potash,
Church's Fish and Potash D, 1916,
Clark's Cove Bay State Fertilizer, 1916,
Clark's Cove Great Planet Manure AA, 1916,
Clark's Cove Potato Manure, 1916,
Darling's Animal Fertilizer, 1916,
Darling's Potato Manure, 1916,
Farquhar's Fine Ground Bone,
Farquhar's Special Lawn and Garden Dressing without Potash,
Farquhar's Special Vegetable and Potato Fertilizer without Potash,
Great Eastern Garden Special, 1916,
Great Eastern General, 1916,
Great Eastern Northern Corn Special, 1916,
Great Eastern Potato Manure, 1916,
Pacific Potato Special, 1916,
Special Soluble Pacific Guano without Potash,
Pacific Special Potato Fertilizer without Potash,
Packers' Union Animal Corn Fertilizer, 1916,
Packers' Union Potato Manure, 1916,
Packers' Union Universal Fertilizer, 1916,
Quinnipiac Corn Manure, 1916,
Quinnipiac Market Garden Manure, 1916,
Quinnipiac Potato Manure, 1916,
Quinnipiac Potato Phosphate, 1916,
Quinnipiac Special Corn Manure without Potash,
Quinnipiac Special Potato Phosphate without Potash,
Read's Farmer's Friend Superphosphate, 1916,
Read's High Grade Farmer's Friend Superphosphate, 1916,
Read's Practical Fertilizer, 1916,
Read's Vegetable and Vine Fertilizer, 1916,
Standard Complete Manure, 1916,
Standard Fertilizer, 1916,
Standard Special for Potatoes, 1916,
Wheeler's Corn Fertilizer, 1916,
Wheeler's Potato Manure, 1916,
Williams & Clark Americus Corn Phosphate, 1916,

Williams & Clark Americus High Grade Special for Potatoes and Root Crops, 1916,
Williams & Clark Americus Potato Manure, 1916,
Williams & Clark Special Americus Corn Phosphate without Potash,
Williams & Clark Special Americus Potato Manure without Potash.

Armour Fertilizer Works, 1501 Munsey Bldg., Baltimore, Md.

1–8–2,
2–8–3,
2½–8–1,
3–8–1,
3–8–4,
4–8–0,
4–8–1,
5–8–4,
5–10–0,
7–6–1,
Acid Phosphate (16%),
Bone Meal,
Grain Grower, 2–8–2,
Ground Tankage,
Pure Ground Fish,
Special Tobacco Grower No. 1, 5–4–1,
Special Tobacco Grower No. 2, 5–4–0,
Wheat, Corn and Oats Special, 1–7–1.

Baugh & Sons Co., 20 S. Delaware Ave., Philadelphia, Pa.

Baugh's Complete Animal Base Fertilizer,
Baugh's Fine Ground Bone,
Baugh's High Grade Potato Grower, "Big Potato" Brand,
Baugh's The Old Stand-By: Dissolved Animal Base.

Beach Soap Co., Lawrence, Mass.

Beach's Advance Fertilizer,
Beach's Corn and Vegetable Fertilizer,
Beach's Fertilizer Bone,
Beach's Lawn Dressing Fertilizer,
Beach's Market Garden Fertilizer,
Beach's Top Dressing Fertilizer,
Acid Phosphate (16%),
Nitrate of Soda.

Berkshire Fertilizer Co., Bridgeport, Conn.

Berkshire Ammoniated Bone Phosphate,
Berkshire Complete Fertilizer,
Berkshire Dry Ground Fish,
Berkshire Economical Grass Fertilizer,
Berkshire Grass Special,
Berkshire Long Island Special,
Berkshire Market Garden Fertilizer,
Berkshire Potato and Vegetable Phosphate,
Berkshire Root Fertilizer,
Berkshire Tobacco Grower,
Castor Pomace,
Ground Bone,
Nitrate of Soda,
Special 5–10 Mixture,
Special 10–8 Mixture.

Berkshire Hills Co., Sheffield, Mass.

Agricultural Lime.

E. B. Blood Co., 28 Elm Ave., Brockton, Mass.

Electric Fertilizer and Worm Repeller.

Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.

Bowker's Acid Phosphate (16%),
Bowker's All Round Fertilizer, 1916,
Bowker's Ammoniated Food for Flowers,
Bowker's Basic Lime Phosphate,
Bowker's Blood Tankage (12%),
Bowker's Brighton Phosphate,
Bowker's Complete Alkaline Tobacco Grower, 1916,
Bowker's Corn Phosphate, 1916,
Bowker's Dry Ground Fish,
Bowker's Farm and Garden Phosphate, 1916,
Bowker's Fine Ground Bone Tankage (6%),
Bowker's Fine Ground Nova Scotia Plaster,
Bowker's Four Ten Hill and Drill,
Bowker's Fresh Ground Bone,
Bowker's High Nitrogen Mixture 1916, without Potash,
Bowker's Hill and Drill Phosphate, 1916,
Bowker's Lawn and Garden Dressing, 1917,
Bowker's Nitrate of Soda,
Bowker's One Ten Sure Crop,
Bowker's Potato Phosphate, 1916,
Bowker's Soluble Phosphate,
Bowker's Sulphate of Ammonia,
Bowker's Sure Crop Phosphate, 1916,
Bowker's Three Ten All Round,
Bowker's Tobacco Grower, 1916,

Bowker's Two Ten Corn,
Bowker's Two Ten Farm and Garden,
Bowker's Two Ten Potato,
Stockbridge Cereal Manure without Potash, 1916,
Stockbridge Early Crop Manure, 1916,
Stockbridge Five Eight General Crop,
Stockbridge Five Ten Early Crop,
Stockbridge General Crop Manure, 1916,
Stockbridge Market Garden Manure.

Jos. Breck & Sons Corp., 51 N. Market St., Boston, Mass.

Breck's Ram's Head Brand Sheep Manure.

Edward Bryant Co., 23 Central St., Boston, Mass.

Land Lime, or Agricultural Lime, or Air Slaked Lime,
Lime and Wood Ashes.

F. W. Brode & Co., 40 S. Front St., Memphis, Tenn.

Dove Brand Cottonseed Meal.

Buckeye Cotton Oil Co., Cincinnati, Ohio.

Buckeye Cottonseed Meal.

Carters Tested Seeds, Inc., 102 Chamber of Commerce, Boston, Mass.

Carters Anti-Clover Manure No. 2,
Carters Complete Grass Manure No. 1,
Carters General Purposes Manure No. 3,
Carters Worm Eradicating Fertilizer.

Cheshire Lime Manufacturing Co., Cheshire, Mass.

Cheshire Agricultural Lime.

The E. D. Chittenden Co., Bridgeport, Conn.

Chittenden's Complete Tobacco and Onion Grower with 2% Potash,
Chittenden's Complete Tobacco and Onion Grower without Potash,
Chittenden's Dry Ground Fish,
Chittenden's Grass and Grain with 1% Potash,
Chittenden's Grass and Grain without Potash,
Chittenden's Potato and Grain, 1% Potash,
Chittenden's Tobacco Special with 1% Potash,
Chittenden's Tobacco Special with 2% Potash,
Chittenden's Tobacco Special without Potash,
Chittenden's Vegetable and Onion Grower with 1% Potash,
Chittenden's Vegetable and Onion Grower without Potash.

Clay & Son, Stratford, London, England.

Clay's Fertilizer.

The Coe-Mortimer Co., 51 Chambers St., New York, N. Y.

E. Frank Coe's Basic Fruit and Legume Phosphate (Basic Lime Phosphate), (Key-Plow Brand),
E. Frank Coe's Columbian Corn and Potato Fertilizer, 1916,
E. Frank Coe's Connecticut Wrapper Grower, Revised,
E. Frank Coe's Connecticut Wrapper Grower without Potash,
E. Frank Coe's Excelsior Potato Fertilizer, 1916,
E. Frank Coe's Gold Brand Excelsior Guano, 1916,
E. Frank Coe's High Grade Ammoniated Superphosphate, 1916,
E. Frank Coe's High Grade Soluble Phosphate,
E. Frank Coe's Morcoe Top Dresser, without Potash,
E. Frank Coe's New Englander Special, 1916,
E. Frank Coe's Prolific Crop Producer, 1916,
E. Frank Coe's Red Brand Excelsior Guano, 1916,
E. Frank Coe's Standard Potato Fertilizer, 1916,
E. Frank Coe's Superphosphate (16%),
E. Frank Coe's Top Dressing Manure, 1916,
E. Frank Coe's XXV Ammoniated Phosphate, 1916,
Blood Tankage (12%),
Country Club (Reg. U. S. Pat. Off.) Golf and Lawn Fertilizer, 1916,
Brand A, for Putting Greens,
Fine Ground Bone,

Ground Tankage, 6 and 30,
Ground Tankage, 9 and 20,
High Grade Dried Blood,
Nitrate of Soda.

F. E. Conley Stone Co., Utica, N. Y.

Raw Ground Lime (Ground Limestone).

J. A. Creighton & Co., Thomaston, Maine.

Creighton's Agricultural Lime.

S. P. Davis, Little Rock, Ark.

Good Luck Brand Cottonseed Meal.

John C. Dow Co., 13 & 14 Chatham St., Boston, Mass.

Dow's Ground Tankage,
Dow's Pure Ground Bone.

Duren & Co. Inc., 453 Washington St., Boston, Mass.

Vermarlco.

Eastern Chemical Co., Jamaica Plain, Boston, Mass.

Imp. Plant Food.

Edison Pulverized Limestone Co., Stewartsville, N. J.

Edison Pulverized Limestone.

Essex Fertilizer Co., 39 N. Market St., Boston, Mass.

Essex Grain, Grass and Potato Fertilizer,
Essex Market Garden and Potato Manure,
Essex Potato, Corn and Vegetable,
Essex Potato Phosphate,
Essex Special Potato,
Essex Tobacco Manure,
Essex XXX Fish Fertilizer.

Farnam Cheshire Lime Co., Farnams, Mass.

Agricultural Lime.

R. & J. Farquhar & Co., 6 and 7 S. Market St., Boston, Mass.

Pulverized Sheep Manure, "Purity Brand,"
Pure Canada Unleached Hardwood Ashes.

Federal Chemical Co., Lincoln Bank Building, Louisville, Ky.

Daybreak Tennessee Brown Phosphate Rock.

John Glennie, Ward Hill, Mass.

Superphosphate.

Grangers Lime Co., West Stockbridge, Mass.

Grangers Lime.

Hampton Co., Easthampton, Mass.

Precipitated Lime.

Herbert Harris, Saylesville, R. I.

Ground Limestone,
Slaked Lime.

Charles W. Hastings, Stoughton, Mass.

Ferti-Flora.

Thos. Hersom & Co., New Bedford, Mass.

Bone Meal,
Meat and Bone,
Neverfail.

A. W. Higgins, Westfield, Mass.

Acid Phosphate,
Castor Pomace,
Cottonseed Meal,
Cyanamid,
Dry Fish,
Garden Fertilizer,
Nitrate of Soda,
Precipitated Bone,
Sulfate of Ammonia,
Tankage.

Home Soap Co., Worcester, Mass.

Pure Ground Bone,
Tankage.

The Hoosac Co., North Adams, Mass.

Ground Limestone.

Hoosac Valley Lime Co. Inc., Adams, Mass.

Adams Agricultural Lime,
Adams Lime Ashes.

Hudson Carbon Co., Ballston Spa, N. Y.

Davidge's Special Phosphorus.

Humphreys-Godwin Co., 20 N. Front St., Memphis, Tenn.

Bull Brand Cottonseed Meal,
Danish Brand Cottonseed Meal,
Forfat Brand Cottonseed Meal,
Topsy Brand Cottonseed Meal.

International Agricultural Corp. (Buffalo Fert. Works, Branch), Buffalo, N. Y.

Buffalo Ammoniated Phosphate,
Buffalo Economy,
Buffalo Farmers' Choice,
Buffalo General Favorite,
Buffalo High Grade Manure,
Buffalo New England Special,
Buffalo Onion, Vegetable and Potato,
Buffalo Potash Special,
Buffalo Potato and Corn,
Buffalo Potato and Truck Manure,
Buffalo Sixteen Per Cent,
Buffalo Standard,
Buffalo Superior,
Buffalo Tobacco Grower,
Buffalo Top Dresser,
Buffalo Triumph,
Dry Ground Fish,
Lime Carbonate.

John Joynt, Lucknow, Ontario, Canada.

Canada Unleached Hardwood Ashes.

J. B. King & Co., 17 State St., New York, N. Y.

Nova Scotia Land Plaster.

Listers Agricultural Chemical Works, Newark, N. J.

Listers Complete Tobacco Fertilizer without Potash,
Listers Complete Tobacco Manure, 1916,
Listers Corn and Potato Fertilizer, 1916,
Listers Crescent Ammoniated Superphosphates, 1916,
Listers Dry Ground Fish,
Listers Excelsior Guano, 1916,
Listers High Grade Special for Spring Crops, 1916,
Listers Onion Fertilizer,
Listers Plant Food, 1916,
Listers Potato Manure, 1916,
Listers Special Potato Fertilizer, 1916,
Listers Special Tobacco Fertilizer, 1916,
Listers Special Tobacco Fertilizer, 1916, without Potash,
Listers Standard Pure Superphosphate of Lime, 1916,
Listers Success Fertilizer, 1916,
Listers Superior Ammoniated Superphosphate, 1916,
Nitrate of Soda.

Lowell Fertilizer Co., 40 N. Market St., Boston, Mass.

Lowell Animal Brand,
Lowell Bone Fertilizer,
Lowell Dry Ground Fish,
Lowell Empress Brand,
Lowell Ground Bone,
Lowell Ground Tankage,
Lowell Market Garden Special Grass and Lawn Dressing,
Lowell Nitrate of Soda,
Lowell Potato, Corn and Vegetable,
Lowell Potato Manure,
Lowell Potato Phosphate,
Lowell Sterling Phosphate,
Lowell Tobacco Grower.

Mapes Formula & Peruvian Guano Co., 143 Liberty St., New York, N. Y.

Mapes Cereal Brand, 1916,
Mapes Corn Manure, 1916 Brand,
Mapes 5% Ammonia Special,
Mapes General Special, 1916 Brand,
Mapes 1917 Special
Mapes Potato Manure, 1916 Brand,
Mapes Tobacco Manure, 1916 Brand,
Mapes Tobacco Starter, Improved,
Mapes Top Dresser, Half Strength, 1916 Brand,
Mapes Top Dresser, Full Strength, 1916 Brand.

George E. Marsh Co., Lynn, Mass.

Marsh's Dry Ground Tankage,
Marsh's Pure Raw Bone Meal,
Fish and Animal Meal.

Missisquoi Lime Works, St. Albans, Vt.

Lime Ashes.

Mitchell Fertilizer Co., 26 S. Water St., Providence, R. I.

Mitchell's Vegetable Fertilizer.

C. E. Mosher, South Deerfield, Mass.

Fish Scraps.

James E. McGovern, Andover, Mass.

Andover Animal Fertilizer.

National Fertilizer Co., 92 State St., Boston, Mass.

National Complete Root and Grain Fertilizer, 1916,
National Eureka Potato Fertilizer, 1916,
National Excelsior Potato Manure,
National Nitrogen Phosphate Mixture, No. 2,
National Nitrogen Phosphate Mixture, No. 3,
National Nitrogen Phosphate Mixture, No. 4,
National Nitrogen Phosphate Mixture, No. 5,
National Nitrogen Phosphate Mixture, No. 6,
National Pine Tree State Potato Fertilizer,
National Plain Superphosphate (16%),
National Potato Phosphate, 1916,
National Special High Grade Top Dressing without Potash,
National Tobacco Special without Potash,
National XXX Fish and Potash, 1916.

Nature's Plant Food Co., Boston, Mass.

Nature's Plant Food.

Natural Guano Co., Aurora, Ill.

"Sheep's Head" Pulverized Sheep Manure.

New England Dressed Meat & Wool Co., 41 N. Market St., Boston, Mass.

Bone Fertilizer.

New England Fertilizer Co., 40A N. Market St., Boston, Mass.

New England Corn and Grain Fertilizer,
New England Corn Phosphate,
New England Ground Bone,
New England High Grade Potato Fertilizer,
New England Potato, Corn and Vegetable Fertilizer,
New England Potato Fertilizer,
New England Special Tobacco Manure,
New England Superphosphate.

New England Lime Co., Danbury, Conn.

Adams (Mass.) Agricultural Lime,
Adams (Mass.) Fresh Burned Granulated Lime,
Canaan (Conn.) Ashes,
Connecticut Agricultural Lime,
Ground Agricultural Limestone.

Nitrate Agencies Co., 104 Pearl St., New York, N. Y.

N.A.C. Brand Ground High Grade Tankage,
N.A.C. Brand Ground Steamed Bone,
N.A.C. Brand Ground Tankage,
N.A.C. Brand High Grade Acid Phosphate,
N.A.C. Brand Nitrate of Soda.

Olds & Whipple, Hartford, Conn.

O. & W. Castor Pomace,
O. & W. Complete Onion Fertilizer,
O. & W. Complete Tobacco Fertilizer,
O. & W. Dry Ground Fish,
O. & W. High Grade Starter,
O. & W. Precipitated Bone Phosphate,
O. & W. Special Grass Fertilizer,
O. & W. Special Onion Fertilizer,
O. & W. Tobacco Special.

Parmenter & Polsey Fertilizer Co., 41 N. Market St., Boston, Mass.

P. & P. "AA" Brand,
P. & P. Corn and Grain Fertilizer,
P. & P. Potato Fertilizer,
P. & P. Potato and Vegetable,
P. & P. Plymouth Rock Brand,
P. & P. Special Potato Fertilizer,
P. & P. Special Tobacco Grower,
P. & P. Star Brand Superphosphate.

Pownal Lime Co., 92 State St., Boston, Mass.

Pownal Agricultural Limestone.

R. T. Prentiss, Holyoke, Mass.

R. T. Prentiss Potatoes,
R. T. Prentiss Top Dressing.

Pulverized Manure Co., Union Stock Yards, Chicago, Ill.

Wizard Brand Cattle Manure,
Wizard Brand Sheep Manure.

Reading Bone Fertilizer Co., Reading, Pa.

Reading All Crop Special,
Reading Prize Winner,
Reading Special Grain and Grass Producer,
Reading Special Potato and Tobacco Manure,
Acid Phosphate (16%),
Farmers' Tankage and Potash,
Truck, Fruit, Tree, Vine, Potato and Tobacco Grower.

Rockland & Rockport Lime Co., Rockland, Maine.

R-R Ground Limestone,
R-R Land Lime.

Rogers & Hubbard Co., Middletown, Conn.

Hubbard's "Bone Base" Oats and Top Dressing,
Hubbard's "Bone Base" Soluble Corn and General Crops,
Hubbard's "Bone Base" Soluble Potato Manure,
Hubbard's "Bone Base" Soluble Tobacco Manure,
Hubbard's Pure Raw Knuckle Bone Flour,
Hubbard's Strictly Pure Fine Bone,
Hubbard's Tobacco Special,
Rogers' All Soils-All Crops Phosphate,
Rogers' Climax Tobacco Brand,
Rogers' Complete Phosphate,
Rogers' High Grade Oats and Top Dressing,
Rogers' High Grade Soluble Corn and Onion Manure,
Rogers' High Grade Soluble Tobacco Manure,
Rogers' High Grade Soluble Tobacco and Potato Manure,
Rogers' High Grade Tobacco Grower (Vegetable Formula),
Rogers' Potato Phosphate,
Rogers' Pure Fine Ground Bone,
Rogers' Pure Knuckle Bone Flour,
Rogers & Hubbard's All Soils-All Crops Phosphate,
Rogers & Hubbard's Complete Phosphate,
Rogers & Hubbard's Potato Phosphate,
Rogers & Hubbard's Valley Tobacco Brand.

Ross Bros. Co., Worcester, Mass.

Corn, Grass and Grain,
High Grade Potato and Vegetable,
Potato and Vegetable (1.65% Nitrogen),
Potato and Vegetable (2.88% Nitrogen),
Spring Grass Top Dressing,
Spring Lawn Dressing,
Wood Ashes from Dye Factory.

F. S. Royster Guano Co., 1604 Munsey Building, Baltimore, Md.

Royster's Arrow Head Tobacco Fertilizer,
Royster's Curfew Ammoniated Superphosphate,
Royster's Drillwell Phosphate,
Royster's Good Will Ammoniated Superphosphate,
Royster's High Grade 16% Acid Phosphate,
Royster's Penguin Ammoniated Superphosphate,
Royster's Pipe of Peace Tobacco Fertilizer,
Royster's Valley Tobacco Compound,
Dry Ground Fish.

Prof. J. W. Sanborn, Pittsfield, N. H.

Prof. Sanborn's Chemical Fertilizer for Grass and Grain,
Prof. Sanborn's Chemical Fertilizer for Potatoes and Corn.

Sanderson Fertilizer & Chemical Co., New Haven, Conn.

Sanderson's Acid Phosphate,
Sanderson's Atlantic Coast Bone, Fish and Potash, 1916,
Sanderson's Complete Tobacco Grower, 1916,
Sanderson's Corn Superphosphate, 1916,

Sanderson's Double Strength Ammonia Mixture,
Sanderson's Formula A, 1916,
Sanderson's Formula B, 1916,
Sanderson's High Grade Ammoniated Phosphate,
Sanderson's Nitrate of Soda,
Sanderson's Phosphate without Potash,
Sanderson's Potato Manure, 1916,
Sanderson's Special without Potash,
Sanderson's Top Dressing for Grass and Grain, 1916,
Sanderson's Top Dressing for Grass and Grain without Potash,
Kelsey's Bone, Fish and Potash, 1916.

M. L. Shoemaker & Co., Venango St. and Delaware Ave., Philadelphia, Pa.

Swift-Sure Bone Meal,
Swift-Sure Superphosphate for Tobacco and General Use.

J. E. Soper & Co., 206 Chamber of Commerce, Boston, Mass.

Pilgrim Cottonseed Meal,
Puritan Cottonseed Meal.

Springfield Rendering Co., Springfield, Mass.

Springfield Animal Fertilizer,
Springfield High Grade Dressing,
Springfield Special Potato and Vegetable Fertilizer,
Brightwood Special Vegetable and Potato Grower.

Stearns Lime Co., Danbury, Conn.

Ground Limestone for Soil Improvement.

Taylor Bros., Market and Front Sts., Camden, N. J.

Hard Wood Ashes.

Wm. Thomson & Sons, Ltd., Clovenfords, Scotland.

Thomson's Special Chrysanthemum Manure,
Thomson's Vine, Plant and Vegetable Manure.

Tobey Lime Co., West Stockbridge, Mass.

Agricultural Lime.

20th Century Specialty Co., 317 Adams St., Dorchester, Mass.

"Scientific" 12 L.

Union Seed & Fertilizer Co., 27 Beaver St., New York, N. Y.

American Red Tag Cottonseed Meal.

Virginia-Carolina Chemical Co., 120 Broadway, New York, N. Y.

V. C. C. Co.'s High Grade Corn and Vegetable Compound (without Potash),
V. C. C. Co.'s Indian Brand for Tobacco (C. S. M. without Potash),
V. C. C. Co.'s Indian Brand for Tobacco No. 2 (C. S. M. with Sulfate),
V. C. C. Co.'s Tobacco and Onion Special,
V. C. C. Co.'s XXXX Fish and Potash Mixture.

West Stockbridge Lime Co., West Stockbridge, Mass.

Agricultural Lime.

Whitman & Pratt Rendering Co., 15 Exchange St., Boston, Mass.

Whitman & Pratt's 1½-10 Brand,
Whitman & Pratt's 3-8-1 Brand,
Whitman & Pratt's 3-10 Brand,
Whitman & Pratt's 4-10 Brand,
Whitman & Pratt's 4-10-1 Brand,
Whitman & Pratt's 5-8-1 Brand,
Whitman & Pratt's 5-10 Brand,
Whitman & Pratt's Ground Bone,
Acid Phosphate,
Dried Blood,
Nitrate of Soda,
Tankage.

Wilcox Fertilizer Co., Mystic, Conn.

Wilcox Acid Phosphate,
Wilcox Complete Bone Superphosphate,
Wilcox Corn Special,
Wilcox Fish and Potash,
Wilcox Grass Fertilizer,
Wilcox High Grade Vegetable Fertilizer,
Wilcox Nitrate of Soda,
Wilcox Potato Fertilizer,

Wilcox Potato, Onion and Vegetable Phosphate,
Wilcox Tobacco Special.

E. H. Winter, Brockton, Mass.
Pure Ground Bone.

J. M. Woodard, Greenfield, Mass.
Unground Tankage.

Worcester Rendering Co., Auburn, Mass.
Royal Worcester Complete Dressing,
Royal Worcester Corn and Grain Fertilizer,
Royal Worcester Potato and Vegetable Fertilizer,
Royal Worcester Pure Ground Bone,
Fine Ground Tankage.

COLLECTION OF SAMPLES. The collection work has been in the hands of three experienced men, and although as early and as thorough a canvass as usual was made of the State, the unprecedented demand for fertilizer resulted in a depletion of the stocks to such an extent that it was not possible in all cases to procure representative samples of registered brands. The collection was continued much later than usual in the hope that most of the registered brands might be located, but for some reason the stocks of the agents were not replenished although an active demand for mixed fertilizers was everywhere in evidence. There has been the usual number of requests for the sampling of early shipments of cottonseed meal, wood ashes, and chemicals, as well as mixed fertilizers. Prompt reports are furnished in all cases where cash purchases are made and the carload becomes the unit. In cases where a large number of samples of the same brand are analyzed, the Station is compensated in part for the extra work involved.

Statistics of Sampling. The following data in regard to the 1917 collection may be of interest: sacks sampled 12,801, representing 5,452 tons of fertilizer; 136 towns were visited; 1,047 samples, representing 441 distinct brands, were drawn from stock found in the possession of 360 different agents or owners.

FERTILIZERS ANALYZED. Six hundred and twenty-six analyses (441 distinct brands) have been made during the year's inspection. Six hundred of these, representing 418 brands, are published in this bulletin. Twenty-four analyses, representing 21 brands, have not been published on account of lack of space. They were private mixtures, officially collected, but not registered. The registered brands analyzed are as follows:

	Analyses	*Brands*
Complete fertilizers	140	129
Ammoniated superphosphates	198	158
Ground bone, tankage and dry ground fish	72	51
Nitrogen compounds	99	28
Phosphoric acid compounds	28	21
Wood ashes	31	3
Lime compounds	34	28

FERTILIZER TRADE VALUES. The fluctuation in prices for standard raw materials and chemicals has been even more remarkable during 1917 than for the previous year, as evidenced by the following table:

Name of Material.	Wholesale Ton Quotations taken from the Oil, Paint and Drug Reporter.			Manufacturers' Retail Quotations. Average of Several made in Feb., 1917.
	Feb., 1916.	For 6 Mos. Preceding March 1, 1917.	Oct. 1, 1917.	
Ammonium Sulfate	$77.00	$85.43	$140.00	$101.00
Nitrate of Soda	71.40	62.30	100.00	79.00
Dried Blood	38.64	46.14	80.62	79.00
Tankage (9 and 20)	29.90	34.49	55.00	50.25
Dry Ground Fish	not quoted	43.32	72.90	53.50
Cottonseed Meal (6.17 N.)	37.07	43.22	52.50	43.10*
Acid Phosphate (16%)	12.38	11.42	17.00	18.46
Muriate of Potash	468.00	425.00	350.00	not quoted
High grade Sulfate of Potash	350.00	288.00	300.00	not quoted

* Cottonseed meal guaranteed 6.17% nitrogen was offered in September, 1916, for $33.50; October 1, 1917, for $52.00 cash.

At a meeting of Experiment Station representatives of the New England States, New York and New Jersey, held last March, it was voted that on account of the widely fluctuating prices which had prevailed, it would not be possible to establish a satisfactory schedule of trade values. This is quite evident to any one who has studied the above table.

GENERAL INFORMATION CONCERNING REGISTERED RAW PRODUCTS AND CHEMICALS. Ground Bone. Thirty-two samples have been inspected during the season, necessitating 23 analyses. Ground bone has averaged 3.01 per cent of nitrogen and 24.68 per cent of phosphoric acid. The average retail cash price has been $40.95. On the whole the guarantees on ground bone have been well maintained. Only three samples show a commercial shortage. They are as follows:

Coe-Mortimer Co. E. Frank Coe's Fine Ground Bone, No. 854. Nitrogen found 2.12%, guaranteed 2.47%; phosphoric acid found 23.42%, guaranteed 22.98%.

Rogers & Hubbard Co. Hubbard's Pure Raw Knuckle Bone Flour, No. 612. Nitrogen found 3.82%, guaranteed 3.82%; phosphoric acid found 22.98%, guaranteed 24.70%.

Rogers' Pure Knuckle Bone Flour, No. 894. Nitrogen found 3.89%, guaranteed 3.82%; phosphoric acid found 23.16%, guaranteed 24.70%.

Ground Tankage. Twenty-two samples of tankage have been inspected, necessitating 21 analyses. Seven of these samples were found deficient in nitrogen. The average total nitrogen found was 7.32 per cent. The average phosphoric acid found was 11.11 per cent. The average retail cash price has been $44.36 per ton. Assuming that the pound of phosphoric acid in tankage is worth 5 cents, the cost of a pound of nitrogen from this source would have been 22.7 cents. Three brands were found to have commercial shortages of over 50 cents per ton. They are as follows:

Armour Fertilizer Works. Tankage, No. 311. Nitrogen found 6.97%, guaranteed 7.40%; phosphoric acid found 7.78%, guaranteed 6.87%.

Home Soap Co. Tankage, No. 58. Nitrogen found 4.97%, guaranteed 11.00%; phosphoric acid found 20.22%, guaranteed 1.68%. This same brand was found seriously deficient in nitrogen in 1916. The manufacturer promised to have the guarantee changed to conform to the actual composition of the goods, and to have new tags printed before further sales were made of the product. We have every reason to believe that the manufacturer lived up to this promise. Sample No. 58, which is herewith published, was stock carried over by one of their agents and upon which the agent neglected to attach the new tags, furnished by the manufacturer giving the revised guarantee. As nearly as we could ascertain, it was entirely the agent's fault. Prosecution and conviction followed our investigation of the case. On another sample of this brand the revised guarantee was found to be well maintained.

Nitrate Agencies Co. Ground Tankage 7-7 Brand, No. 914. Nitrogen found 5.58%, guaranteed 5.75%; phosphoric acid found 6.86%, guaranteed 6.86%. As soon as the company's attention was called to this deficiency, through an advanced report, they took immediate steps to reimburse the purchaser for the deficiency. An allowance was also made the consumer for an unsatisfactory mechanical condition of the tankage.

Dry Ground Fish. Forty-two samples of fish were inspected, necessitating 27 analyses. Ten samples were found deficient in nitrogen and eight in phosphoric acid. The average retail cash price has been $54.91 per ton. The average total nitrogen found was 8.13 per cent. The average phosphoric acid was 10.07 per cent. Allowing 5 cents as the value of a pound of phosphoric acid, the nitrogen in dry ground fish has cost on the average 27.6 cents per pound. Seven samples were found to have a commercial shortage. They are as follows:

E. D. Chittenden Co. Chittenden's Dry Ground Fish, No. 904. Nitrogen found 8.11%, guaranteed 8.23%; phosphoric acid found 3.90%; guaranteed 6.00%. The manufacturer has the following to say regarding this deficiency: "It would appear from the moisture test that perhaps these goods were not stored in a dry place, as they only tested 6.90 per cent before shipping from Baltimore, whereas your analysis showed 9.97 per cent. Dr. Gascoyne's test on this shipment shows 8.14 per cent of nitrogen. Our sample was drawn by a sworn sampler and weighed and delivered to Dr. Gascoyne under seal. We believe our sample was correctly drawn and feel that Dr. Gascoyne's analysis shows that we lived up to our guarantee in good faith." It might be said in this connection that another sample of Chittenden's Dry Ground Fish has been analyzed, and a considerable over-run in nitrogen was found. This second sample, however, was somewhat deficient in total phosphoric acid, although no commercial shortage was apparent.

A. W. Higgins. Dry Ground Fish, No. 967. Nitrogen found 7.62%, guaranteed 8.23%; phosphoric acid found 12.69%, guaranteed 13.00%.

Another sample of the same brand, No. 968. Nitrogen found 7.51%, guaranteed 8.23%; phosphoric acid found 15.15%, guaranteed 13.00%.

Another sample of the same brand, No. 969. Nitrogen found 7.06%, guaranteed 8.23%; phosphoric acid found 15.87%, guaranteed 13.00%.

In explanation of these deficiencies it may be said that Mr. Higgins' fish was sold on the unit basis of ammonia. The consumer, therefore, paid for what nitrogen was shown by actual analysis to be present,—the basis of settlement to be the analysis by the Experiment Station.

Geo. E. Marsh Co. Ground Fish and Animal Tankage, No. 597. Nitrogen found 5.95%, guaranteed 6.58%; phosphoric acid found 9.98%, guaranteed 9.15%. It is not believed that much of this material was sold to the general trade.

F. S. Royster Guano Co. Dry Ground Fish, No. 947. Nitrogen found 7.71%, guaranteed 8.23%; phosphoric acid found 5.72%, guaranteed 5.00%.

Dried Blood. Only one sample has been inspected. This was listed as having cost $94.00 a ton. It tested 13.4 per cent nitrogen. This would make the pound cost of nitrogen from blood 35 cents.

Calcium Cyanamid. Seven samples, representing five analyses, were inspected. The average total nitrogen has been 18.03 per cent. The average ton price has been $73.28, making the pound cost of nitrogen 20.3 cents. The samples were found to be well up to the minimum guarantee.

Castor Pomace. Twelve samples were analyzed, representing four brands. The cash price per ton of this material has been $31.43. The average per cent of nitrogen found was 4.84, making the pound cost of nitrogen 32.5 cents. All of the samples were found well up to the guarantee.

Cottonseed Meal. Sixty-three samples of cottonseed meal have been analyzed. The average cost has been $43.10 per ton. They have shown an average of 6.34 per cent nitrogen, making the pound cost of this element 34 cents. This is not taking into consideration the value of the phosphoric acid and potash, but assuming that the meal was bought for its nitrogen content alone. It is safe to say that the value of the potash and phosphoric acid in average cottonseed meal is around $7.00 to $7.50 per ton at present prices. Fourteen samples, or fourteen carloads, have shown commercial shortages, the value of potash and phosphoric acid not having been taken into consideration. The shortages are as follows:

Humphreys-Godwin Co. Forfat Brand Cottonseed Meal, No. 57. Nitrogen found 5.96%, guaranteed 6.17%. Five other carloads were found well up to the guarantee.

Union Seed & Fertilizer Co. American Red Tag Cottonseed Meal, Nos. 12, 27, 53, 62, 75, 76, 106, 107, 108, 229, 392, 492, 660. Average nitrogen found 6.02%, guaranteed 6.17%. Eighteen other carloads did not show a commercial shortage.

It might be said in this connection that nearly all of the cottonseed meal bought for fertilizing purposes is sold on a basis price, rebates being allowed for nitrogen deficiencies, and over-runs paid for on the same basis, a unit price for nitrogen or ammonia being agreed upon. The writer does not know of any cases where proper rebates have not been allowed.

Nitrate of Soda. Twenty-three samples have been examined, necessitating 15 analyses. No deficiencies were found. The average nitrogen content has been 15.64 per cent. The average cost of nitrate of soda has been $78.29, making the pound of nitrogen cost 25 cents.

Sulfate of Ammonia. Four samples have been analyzed and no deficiencies found. The average nitrogen test was 21.32 per cent. The average ton cost has been $116.00, making the pound of nitrogen cost 27.2 cents.

Wood Ashes. Thirty-one carloads of wood ashes were analyzed, representing three different brands. The average of these analyses is as follows:

Moisture	16.92%
Phosphoric acid	1.38%
Calcium oxide	29.48%
Total, or acid soluble potash	4.29%
Water soluble potash	3.36%

The above average shows that about 78.32 per cent of the total potash was soluble in water, as against 74.50 per cent for the previous year. Wood ashes have cost on the average $18.06 per ton. Allowing a fair value for the lime and phosphoric acid present in the average ash of good quality, makes the pound of water soluble potash from this source cost somewhere around 22 cents.

Nine carloads of the Joynt brand of wood ashes were found deficient in potash, two in phosphoric acid and two in lime. Eight carloads had a commercial shortage. They were samples Nos. 24, 25, 26, 29, 253, 655, 834 and 984. Details of these shortages are apparent by reference to the tables of analyses. It may be said in this connection that rebates have usually been allowed for potash deficiencies.

Taylor Bros. Hardwood Ashes, No. 48. These cannot be classed as hardwood ashes. They are similar in composition to lime ashes. The company has been advised that they would not be allowed to sell this product in Massachusetts under the name of hardwood ashes another season. The product is said to be derived from a dye factory where hardwood is used for fuel. If such is the case, the potash had been pretty thoroughly leached out before the ashes were shipped. A recent communication from this company gives the added information that the sale of the ashes has been discontinued.

Acid Phosphate. Thirty-six samples of acid phosphate have been examined, necessitating 19 analyses. The average per cent of available phosphoric acid found was 16.72. Acid phosphate has cost, on the average, $22.58 per ton, making the pound of available phosphoric acid from this source cost 6.75 cents. Only one sample has shown a commercial shortage.

Nitrate Agencies Co. Acid Phosphate (16%), No. 181. Available phosphoric acid found 15.00%, guaranteed 16.00%.

Precipitated Phosphate. Seven samples, representing one brand, have been analyzed. The average of five analyses showed the presence of 27.96 per cent of available phosphoric acid. The selling price of this product has been $31.80, making the pound cost of available phosphoric acid from this source 5.69 cents.

MIXED COMPLETE FERTILIZERS. The summaries of analyses of complete fertilizers show that out of a total of 129 brands analyzed, 63 (49 per cent of the total number) fell below the minimum guarantee in one or more elements. The deficiencies were as follows:

Brands deficient in one element	50
Brands deficient in two elements	13

Only four brands (3.1 per cent of the total number) showed a commercial shortage. The deficiencies in the several ingredients were as follows:

Brands deficient in nitrogen	16
Brands deficient in available phosphoric acid	24
Brands deficient in potash	36

The following table shows commercial shortages of 25 cents and over per ton in mixed complete fertilizers, as compared with 1916.

Commercial Shortages.	Number of Brands	
	1916	1917
More than $2.00 per ton	1	2
Between $1.00 and $2.00 per ton	2	0
Under $1.00, not less than 25 cts. per ton	2	2

The following brands have shown a commercial shortage of 50 cents or over per ton, values of over-runs being used in all cases to reduce shortages.

Alphano Humus Co. Alphano Humus, No. 654. Nitrogen found 1.49%, guaranteed 1.25%; phosphoric acid found .56%, guaranteed .50%; potash found .10%, guaranteed .50%.

Armour Fertilizer Works. Armour's 5-8-4, No. 538. Nitrogen found 3.71%, guaranteed 4.11%; available phosphoric acid found

8.47%, guaranteed 8.00%; potash found 3.35%, guaranteed 4.00%. A communication from the Armour Fertilizer Works states that the formula had been checked up at the factory and no reason could be advanced for the nitrogen deficiency found, as all of the products came from high-grade materials of practically uniform composition. In the instance of the potash deficiency, they state that this element came from Alunite, which is considerably heavier than the other materials in the fertilizer, and would therefore have a tendency to settle in the bags while in transit. Another sample of this brand showed the nitrogen and potash guarantee to be well maintained, only a small deficiency in phosphoric acid being found There was no commercial shortage.

International Agricultural Corporation. Buffalo Potato and Truck Manure, Nos. 842, 932. Nitrogen found 3.17%, guaranteed 3.30%; available phosphoric acid found 9.03%, guaranteed 8.00%: potash found 3.26%, guaranteed 4.00%.

Listers Agricultural Chemical Works. High Grade Special for Spring Crops, Nos. 916, 927. Nitrogen found 2.23%, guaranteed 2.06%; available phosphoric acid found 9.00%, guaranteed 10.00%; potash found .97%, guaranteed 1.00%.

AMMONIATED SUPERPHOSPHATES. Summaries show that out of 158 brands of ammoniated superphosphates analyzed, 58 (36.7 per cent of the total number) fell below the minimum guarantee in one or more elements. Fifty-three brands were found deficient in one element, and five in both elements of plant food. Twenty-two brands were found deficient in nitrogen and forty-one in phosphoric acid. Seven brands showed a commercial shortage, one over $2.00 per ton, one between $1.00 and $2.00, and five under $1.00, but not less than 50 cents. Following are the brands which have shown serious commercial shortages:

International Agricultural Corporation. Buffalo Top Dresser, Nos. 64, 101, 115, 445. Nitrogen found 5.50%, guaranteed 5.80%; available phosphoric acid found 5.65%, guaranteed 6.00%.

Lowell Fertilizer Co. Market Garden Special Grass and Lawn Dressing, No. 157. Nitrogen found 4.66%, guaranteed 4.92%; available phosphoric acid found 8.32%, guaranteed 8.00%.

Four other samples of this brand were found well up to the minimum guarantee.

National Fertilizer Co. High Grade Top Dressing without Potash, No. 937. Nitrogen found 7.73%, guaranteed 8.23%; available phosphoric acid found 5.97%, guaranteed 5.00%.

Rogers & Hubbard Co. Rogers' High Grade Soluble Corn and Onion Manure, Nos. 187, 318, 875. Nitrogen found 2.58%, guaranteed 2.50%; available phosphoric acid found 8.18%, guaranteed 10.00%.

Rogers' High Grade Soluble Tobacco Manure, Nos. 186, 317, 322. Nitrogen found 5.19%, guaranteed 5.00%; available phosphoric acid found 7.78%, guaranteed 10.00%. The manufacturer claims that dissolved bone has been used to furnish a considerable part of the available phosphoric acid, and investigation seems to show that the low phosphoric acid availability may be due to the use of an insufficient amount of sulfuric acid to completely acidulate the bone. The total phosphoric acid was found well up to the guarantee in both cases.

Sanderson Fertilizer & Chemical Co. Sanderson's Double Strength Ammonia Mixture, Nos. 211, 369. Nitrogen found 5.61%, guaranteed 6.58%; available phosphoric acid found 9.16%, guaranteed 8.00%.

Whitman & Pratt Rendering Co. 3-10 Brand, Nos. 563,678. Nitrogen found 2.26%, guaranteed 2.47%; available phosphoric acid found 9.58%, guaranteed 10.00%.

QUALITY OF PLANT FOOD IN MIXED FERTILIZERS.

Nitrogen in Complete Fertilizers. A study of the nitrogen used in the formulas classed as complete fertilizers for 1917, shows that the average total nitrogen found was 3.09 per cent, nitrates and ammoniates 1.62 per cent, and organic nitrogen 1.47 per cent. In other words, 52.4 per cent of the total nitrogen was in form of nitrates and ammoniates, and 47.6 per cent in organic form. The nitrogen derived from mineral sources,—that is, from nitrates and ammoniates,—is readily soluble in water and wholly available. The quality of the organic nitrogen used in these mixtures is indicated by the following averages: water soluble organic .41 per cent, water insoluble organic 1.06 per cent, of which .59 per cent was found active and .47 per cent inactive by the laboratory methods. The average total nitrogen in the complete fertilizers had a percentage activity of 84.79 per cent, the total organic nitrogen 68.04 per cent, and the water insoluble organic nitrogen 55.66 per cent.

Nitrogen in Ammoniated Superphosphates. The following data show the quality of nitrogen used in these mixtures: average total nitrogen found 3.48 per cent, nitrogen in form of nitrates and ammoniates 1.89 per cent, organic nitrogen 1.59 per cent. From these figures it will be seen that about 54.00 per cent of the total nitrogen was present in mineral forms and 46.00 per cent in organic forms. It was found that .52 per cent of the organic nitrogen used was water soluble and that 1.07 per cent was water insoluble. Of this latter .58 per cent was found active and .49 per cent inactive by laboratory methods. The percentage activity of the total nitrogen was about 86.00 per cent, of the total organic nitrogen 69.00 per cent, and of the water insoluble organic nitrogen 54.00 per cent.

Brands of Mixed Fertilizers Showing Inferior Forms of Nitrogen. Fifteen out of a total of 122 brands of complete fertilizers, and nine out of a total of 158 brands of ammoniated superphosphates, besides one brand of partially dried peat or humus, one brand composed largely of soot and eight samples of pulverized sheep manure, were found to contain organic nitrogen of questionable quality and are indicated in the tables of analyses by the word "*inferior*" in the column headed "Quality of Water Insoluble Organic Nitrogen."

The table which follows gives in detail the results of studies on the brands of mixed fertilizers (complete fertilizers and ammoniated superphosphates) which show the presence of inferior forms of nitrogen by both the alkaline and neutral permanganate methods. In the interpretation of the results, in case of the alkaline method, an availability materially below 50.00 per cent, and in case of the neutral method an availability below 85.00 per cent, class the water insoluble nitrogen as inferior. A considerably larger number of samples contained organic nitrogen of inferior quality than in 1916, six of the brands of complete fertilizer being recorded as showing inferior forms during the previous year, as well as for 1917. They are as follows:—Armour's Grain Grower, Armour's Wheat, Corn and Oats Special 1-8-2, Baugh's Complete Animal Base Fertilizer, Baugh's High Grade Potato Grower, Carters Worm Eradicating Fertilizer, and Mapes Corn Manure.

It might be said in this connection that the campaign against inferior forms of organic nitrogen was not instituted nor intended to discourage the use of low-grade organic nitrogen-containing substances. The necessity of utilizing these products in order to keep pace with the growing demand for organic ammoniates, as well as to keep down the price of the higher grade organic nitrogen compounds, is fully recognized. Most of the products which contain nitrogen of a low availability may be so treated as to render the resulting mixture highly available. The employment of this process, as in the manufacture of a base goods, should be encouraged in every legitimate manner. The Massachusetts fertilizer law, however, does not concede to the manufacturer the privilege of using these substances in the raw untreated state to furnish any part of the nitrogen of the mixed fertilizer, unless the label shall truly state the specific material or materials from which such part of the nitrogen is derived. (See Section 1, paragraph 5, Chapter 388, Acts of 1911.) It is felt that the law was wisely drawn in this respect, for at the present price of commercial mixed fertilizers, the consumer should with reason expect to receive only highly available plant food in these mixtures. There would, of course, be no objection to the use of these low-grade products in certain mixed formulas, providing their use was properly recorded on the label and the product was sold at a price commensurate with the quality of goods delivered.

BRANDS OF FERTILIZER SHOWING INFERIOR FORMS OF ORGANIC NITROGEN.

Name of Brand.	Total Nitrogen.		Nitrogen as Nitrates and Ammoniates.	Water Soluble Organic Nitrogen.	Water Insoluble Organic Nitrogen.	Activity of Water Insoluble Nitrogen. Method.	
	Found.	Guaranteed.				Alkaline Permanganate	Neutral Permanganate
Complete Fertilizers.							
Armour's Grain Grower.......	1.96	1.65	.66	.45	.85	44.	67.
Armour's 1-8-2...............	1.10	.82	.11	.43	.56	27.	42.
Baugh's Animal Base Fertilizer.	1.66	1.65	.82	.14	.70	45.	74.
Baugh's High Grade Potato Grower....................	3.32	3.30	2.35	.24	.73	38.	72.
Carters Worm Eradicating Fert.	1.92	1.81	.12	.10	1.70	31.	63.
Buffalo General Favorite......	1.51	.80	.70	.42	.39	45.	75.
Buffalo Potato and Corn......	1.63	1.60	.98	.33	.32	39.	74.
Buffalo Potato and Truck.....	3.01	3.30	1.76	.71	.54	42.	77.
Buffalo Potato and Truck.....	3.32	3.30	1.92	.77	.63	37.	79.
Buffalo Superior..............	2.50	2.50	1.43	.51	.56	46.	82.
Listers Special Tobacco.......	2.31	2.06	.92	.76	.63	48.	82.
Mapes Corn Manure..........	2.77	2.47	2.16	.03	.58	39.	74.
Mapes Potato Manure........	3.67	3.71	2.91	.25	.51	41.	70.
R. T. Prentiss Complete Corn and Potato................	2.35	2.47	1.19	.50	.66	36.	64.
R. T. Prentiss Complete Corn and Potato................	3.14	2.47	1.87	.49	.78	32.	66.
Ammoniated Superphos.							
Pacific Special Potato Fert.....	1.96	1.65	.50	.85	.61	45.	78.
Baugh's Old Stand-By........	1.89	1.65	1.22	.11	.56	45.	63.
Essex Grain, Grass and Potato	.97	.82	.21	.40	.36	44.	66.
Buffalo Onion, Vegetable and Potato....................	2.79	2.50	1.37	.63	.79	46.	81.
Buffalo Onion, Vegetable and Potato....................	2.51	2.50	1.26	.73	.52	39.	75.
Buffalo Onion, Vegetable and Potato....................	2.79	2.50	1.92	.67	.38	44.	80.
Listers Onion Fertilizer.......	4.15	4.11	2.48	.86	.81	46.	79.
Mapes 5% Ammonia Special..	4.18	4.12	3.63	.15	.40	43.	73.
Rogers & Hubbard's Complete Phosphate.................	1.14	1.00	.20	.38	.56	40.	72.

Phosphoric Acid in Mixed Fertilizers. Of the total phosphoric acid found in the complete fertilizers, 83.5 per cent was in available form, and 49.2 per cent of the available phosphoric acid was in water soluble form. In the ammoniated superphosphates 83.00 per cent of the total phosphoric acid was in available form and 54.00 per cent of the available phosphoric acid was in water soluble form. These figures are about the same as in previous years and show a satisfactory availability.

Potash in Complete Fertilizers. The average complete fertilizer contained 1.78 per cent of water soluble potash. The larger proportion of the brands had but 1.00 per cent of potash, several had 2.00 per cent and four had a minimum of 4.00 per cent guaranteed. Out of a total of 137 samples analyzed, 47, or 34.00 per cent, failed to meet the minimum potash guarantee. In most instances, however, the deficiencies were not serious.

Seventeen brands of tobacco fertilizer have been examined. Seven of these, or 41.00 per cent of the total number, had their potash in form of sulfate, only traces of chlorine being present. Two brands had all of their potash as muriate and eight brands showed an average of .54 per cent of potash as sulfate and .46 per cent as muriate.

The same form of publication has been retained in the tables as in previous years. An asterisk has been used in the potash "Found" column in all cases where a considerable proportion of the potash has been found as sulfate. Footnotes designate the proportion of each form of potash.

LIME COMPOUNDS. Forty-five samples of lime products have been examined, necessitating 34 analyses, representing 28 distinct brands. The tables of analyses will be found self-explanatory, the analytical data being presented in the same form as in previous years. The guarantees of calcium and magnesium oxides have, as a general rule, been well maintained in all the groups. A study of the tables of analyses emphasizes the fact that the purchaser of lime products for agricultural purposes should pay particular attention to the chemical and mechanical condition of the various offerings, as well as the cost of 100 pounds of actual calcium and magnesium oxides. In case of the raw ground limestones, the finer they are ground the more effective do they become in their effect upon the soil. This may not be true to the same extent in case of burned granulated lime, or the hydrated or slaked products, as they are more active chemically than the unburned or raw ground limes. In general it may be said that the fine ground limestones may be found better adapted to the lighter soils, while the more active lime products usually have a better physical effect on the heavier soils.

EXPLANATION OF THE TABLES OF ANALYSES. The mixed fertilizers have been grouped in the tables as in preceding years. One section contains the brands which carry nitrogen, phosphoric acid and potash; the other section, those fertilizers which carry nitrogen and phosphoric acid. Both are arranged alphabetically according to manufacturer's name, as well as brand name. The nitrogen is given in its various forms as follows: as nitrates and ammoniates, water soluble organic, water insoluble organic and total. The quality of the water insoluble organic nitrogen is indicated by the words "*passed*" and "*inferior.*" The word "*passed*" indicates that the brand carries its water insoluble nitrogen in a satisfactory form, while the word "*inferior*" indicates the use of inferior forms of organic ammoniates. The column headed "Guarantee Substantially Met (?)" will indicate at a glance whether any particular brand suffers a commercial shortage. Wherever the guarantee is substantially met the word "Yes" has been used, while brands showing a serious commercial shortage have been designated by the word "No." The arrangement of the remainder of the tables is the same as in preceding years, and is self-explanatory.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
Alphano Humus Co., Whitehall Bldg., New York City.				
Alphano Humus	Worcester	No	654	44.16
American Agric. Chem. Co., 92 State St., Boston, Mass.				
High Grade Fertilizer, 1916	South Hadley	Yes	876	9.98
Grass and Lawn Top Dressing, 1916	Webster	Yes	733	8.50
Pulverized Sheep Manure	New Bedford	Yes	149	8.36
“ “ “	Amesbury		547	
“ “ “	Northampton		620	
“ “ “	Leominster		643	
Top Dresser, 1916	Warwick	Yes	905	11.23
Bradley's Corn Phosphate, 1916	Millis	Yes	520	9.25
“ “ “ “	Beverly		530	
Bradley's Complete Manure for Potatoes and Veg., 1916	Walpole	Yes	470	10.32
“ “ “ “ “ “ “ “	Millis		517	
“ “ “ “ “ “ “ “	Beverly		529	
“ “ “ “ “ “ “ “	Bradstreet		708	
Bradley's Eclipse Phosphate, 1916	Millis	Yes	518	9.15
Bradley's Potato Fertilizer, 1916	Millis	Yes	519	8.34
Bradley's Potato Manure, 1916	Millis	Yes	523	8.74
Bradley's X. L. Superphosphate of Lime, 1916	Boston	Yes	256	9.28
“ “ “ “ “ “	Walpole		463	
“ “ “ “ “ “	Norwood		464	
“ “ “ “ “ “	Beverly		531	
Church's Fish and Potash	North Westport	Yes	238	10.19
“ “ “ “	Newton L'r Falls		440	
Great Eastern Garden Special	N. Wilbraham	Yes	867	9.92
Great Eastern General, 1916	Northfield	Yes	907	8.13
Great Eastern Northern Corn Special	N. Wilbraham	Yes	865	10.08
Great Eastern Potato Manure	N. Wilbraham	Yes	861	8.11
Pacific Potato Special, 1916	So. Deerfield	Yes	917	9.92
Packer's Union Animal Corn Fertilizer	Amherst	Yes	622	10.46
Packer's Union Potato Manure	Amherst	Yes	621	10.66
Quinnipiac Corn Manure, 1916	Halifax	Yes	921	13.63
Quinnipiac Market Garden Manure, 1916	Fall River	Yes	145	10.33
Quinnipiac Potato Manure, 1916	Fall River	Yes	138	8.45
Quinnipiac Potato Phosphate, 1916	Fall River	Yes	144	10.08
Read's Practical Fertilizer	South Hadley	Yes	880	8.05
Standard Fertilizer, 1916	Whitman	Yes	411	11.72
Standard Special for Potatoes, 1916	Whitman	Yes	408	9.11
Wheeler's Corn Fertilizer, 1916	Hudson	Yes	952	13.13
Williams and Clark Americus Corn Phos., 1916	Norwood	Yes	459	9.29
Williams and Clark Americus High Grade Spec., 1916	Norwood	Yes	458	10.17
Williams and Clark Americus Potato Manure, 1916	Norwood	Yes	466	9.04
Armour Fertilizer Works, Baltimore, Md.				
Armour's Wheat, Corn and Oats Special	Danvers	Yes	588	4.60
“ “ “ “ “ “	Plainville		837	
Armour's Wheat, Corn and Oats Special	Gt. Barrington	Yes	891	8.36
Armour's Grain Grower	Newton L'r Falls	Yes	441	8.85
“ “ “	North Hadley		584	
“ “ “	Danvers		593	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.33	—	1.16	Inferior	1.49	1.25	—	—	—	.56	.50	—	—	.10	.50
1.47	.49	.60	Passed	2.56	2.47	4.75	4.24	1.73	10.72	10.00	8.99	9.00	1.05	1.00
2.63	.20	1.14	Passed	3.97	3.70	3.44	5.13	.92	9.49	9.00	8.57	8.00	.95	1.00
.16	.30	1.91	Inferior	2.37	2.06	—	—	—	1.73	1.25	—	—	1.84	1.00
2.60	.68	.78	Passed	4.06	4.11	3.15	4.87	1.98	10.00	9.00	8.02	8.00	1.07	1.00
.99	.40	.52	Passed	1.91	1.65	6.10	4.63	1.16	11.89	11.00	10.73	10.00	.93	1.00
2.44	.32	.84	Passed	3.60	3.29	5.36	4.44	.99	10.79	10.00	9.80	9.00	1.03	1.00
.65	.41	.40	Passed	1.46	1.23	6.12	4.83	1.14	12.09	11.00	10.95	10.00	.97	1.00
1.28	.41	.59	Passed	2.28	2.06	4.66	5.02	1.19	10.87	9.00	9.68	8.00	.93*	1.00
1.42	.58	.59	Passed	2.59	2.47	5.10	4.50	1.40	11.00	10.00	9.60	9.00	1.05	1.00
1.59	.45	.61	Passed	2.65	2.47	4.94	5.01	1.28	11.23	10.00	9.95	9.00	.87	1.00
1.03	.31	.49	Passed	1.83	1.65	4.95	5.23	1.25	11.43	10.00	10.18	9.00	.99	1.00
2.25	.24	.88	Passed	3.37	3.29	4.97	4.17	1.45	10.59	10.00	9.14	9.00	1.08	1.00
.39	.47	.25	Passed	1.11	.82	4.53	5.32	1.45	11.30	9.00	9.85	8.00	.83†	1.00
1.10	.45	.51	Passed	2.06	2.03	4.55	5.38	1.22	11.15	9.00	9.93	8.00	1.28*	1.00
1.47	.61	.50	Passed	2.58	2.06	4.53	3.67	1.85	10.05	11.00	8.20	10.00	1.03*	1.00
1.29	.55	.48	Passed	2.32	2.06	4.15	4.02	1.91	10.08	9.00	8.17	8.00	1.01	1.00
1.01	.24	.54	Passed	1.79	1.65	5.71	4.53	1.42	11.66	11.00	10.24	10.00	1.00	1.00
1.24	.49	.58	Passed	2.31	2.09	5.74	4.31	1.38	11.43	11.00	10.05	10.00	1.03	1.00
1.20	.50	.53	Passed	2.23	1.65	4.87	5.36	1.56	11.79	11.00	10.23	10.00	.89	1.00
2.17	.48	.90	Passed	3.55	3.29	4.40	4.58	1.53	10.51	10.00	8.98	9.00	1.08	1.00
1.42	.46	.54	Passed	2.42	2.47	4.59	5.32	1.65	11.56	10.00	9.91	9.00	1.01	1.00
1.53	.47	.56	Passed	2.56	2.06	4.44	4.49	1.58	10.51	9.00	8.93	8.00	.82	1.00
.20	.60	.31	Passed	1.11	.82	5.13	5.20	.92	11.25	9.00	10.33	8.00	.80*	1.00
1.03	.29	.56	Passed	1.88	1.65	4.17	6.72	.92	11.81	11.00	10.89	10.00	1.01	1.00
1.34	.47	.49	Passed	2.30	2.06	4.68	4.15	.89	9.72	9.00	8.83	8.00	1.01	1.00
.94	.36	.37	Passed	1.67	1.65	2.65	8.85	1.38	12.88	11.00	11.50	10.00	1.22†	1.00
1.09	.24	.38	Passed	1.71	1.65	5.40	4.47	1.25	11.12	11.00	9.87	10.00	.93*	1.00
2.23	.53	.65	Passed	3.41	3.29	5.27	3.76	1.94	10.97	10.00	9.03	9.00	1.05*	1.00
1.35	.39	.57	Passed	2.31	2.06	3.99	5.13	1.42	10.54	9.00	9.12	8.00	.91	1.00
.10	.21	.63	Passed	.94	.82	4.83	3.05	1.02	8.90	7.50	7.88	7.00	1.28*	1.00
.30	.19	.46	Passed	.95	.82	5.13	1.99	.66	7.78	7.50	7.12	7.00	1.01	1.00
.66	.45	.85	Inferior	1.96	1.65	3.51	4.84	1.22	9.57	8.50	8.35	8.00	2.09	2.00

* No. 519 Chlorine .53% equivalent to .71% potash, .22% potash as sulfate.
† Potash as sulfate.
* " 865 Chlorine .49% equivalent to .66% potash, .62% potash as sulfate.
" 861 " .32% " " .43% " .60% " " "
" 880 " .36% " " .48% " .32% " " "
" 459 " .52% " " .70% " .23% " " "
" 458 " .59% " " .79% " .26% " " "
" 588-837 " .38% " " .50% " .78% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
Armour Fertilizer Works. (Concluded.)				
Armour's 5-8-4 Fertilizer	Middleboro	No	538	7.91
Armour's 5-8-4 Fertilizer	North Hadley	Yes	587	7.80
Armour's 4-8-1 Fertilizer	Amherst	Yes	302	6.18
“ “ “	Middleboro		546	
“ “ “	Danvers		595	
Armour's 1-8-2 Fertilizer	Attleboro	Yes	838	7.49
Armour's Special Tobacco Grower No. 1	Amherst	Yes	293	7.60
“ “ “ “ “	North Hadley		585	
Armour's 3-8-4 Fertilizer	Southwick	Yes	574	7.40
Armour's 3-8-1 Fertilizer	Amherst	Yes	295	6.01
“ “ “	Middleboro		545	
“ “ “	Millbury		771	
Armour's 2½-8-1 Fertilizer	Amherst	Yes	301	6.28
“ “ “	Middleboro		539	
“ “ “	Southwick		573	
Armour's 2-8-3 Fertilizer	Sunderland	Yes	312	9.02
“ “ “	Middleboro		537	
“ “ “	Plainville		836	
Baugh & Sons Co., Philadelphia, Pa.				
Animal Base Fertilizer	Dighton	Yes	204	7.53
“ “ “	Dighton		380	
“ “ “	Marblehead		467	
High Grade Potato Grower	Dighton	Yes	206	9.73
Beach Soap Co., Lawrence, Mass.				
Advance Brand	Lawrence	Yes	475	7.02
Market Garden Fertilizer	Lawrence	Yes	474	13.03
Lawn Dressing	Lawrence	Yes	478	7.88
Top Dressing	Lawrence	Yes	479	6.87
Berkshire Fertilizer Co., Bridgeport, Conn.				
Complete Fertilizer	S. Deerfield	Yes	327	10.99
“ “	Northampton		449	
Long Island Special	Hadley	Yes	898	10.89
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.				
Ammoniated Food for Flowers	Fall River	Yes	516	2.89
“ “ “ “	Boston		823	
Complete Alkaline Tobacco Grower	North Amherst	Yes	306	7.81
“ “ “ “	Southwick		816	
Corn Phosphate, 1916	Dighton	Yes	161	8.58
Hill and Drill Phosphate, 1916	Wellesley	Yes	435	8.71
“ “ “ “ “	Spencer		720	
Potato Phosphate, 1916	Wellesley	Yes	462	9.49
“ “ “	Chelmsford		559	
Sure Crop Phosphate, 1916	Lawrence	Yes	481	10.38
Stockbridge General Crop Manure, 1916	Chelmsford	Yes	565	9.53
“ “ “ “ “	Bridgewater		616	
“ “ “ “ “	Spencer		721	
Joseph Breck & Sons Corporation, Boston, Mass.				
Ram's Head Pulverized Sheep Manure	Boston	Yes	260	8.38
Ram's Head Pulverized Sheep Manure	Norwood	Yes	460	9.03
“ “ “ “ “	Lowell		483	
“ “ “ “ “	Middleboro		541	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.92	.53	2.26	Passed	3.71	4.11	4.36	4.11	1.15	9.62	8.50	8.47	8.00	3.35	4.00
.96	1.52	1.78	Passed	4.26	4.11	4.23	3.47	1.76	9.46	8.50	7.70	8.00	4.05	4.00
.54	.47	2.01	Passed	3.02	3.29	4.75	3.82	1.43	10.00	8.50	8.57	8.00	1.26	1.00
.11	.43	.56	Inferior	1.10	.82	4.34	4.46	.92	9.72	8.50	8.80	8.00	2.56	2.00
.89	.42	2.93	Passed	4.24	4.11	2.84	1.50	.99	5.33	4.50	4.34	4.00	.99	1.00
.54	.66	1.41	Passed	2.61	2.47	2.74	5.81	.94	9.49	8.50	8.55	8.00	4.01	4.00
.63	.63	1.22	Passed	2.48	2.47	3.83	4.26	1.76	9.85	8.50	8.09	8.00	1.09	1.00
.47	.43	1.13	Passed	2.03	2.05	4.08	3.73	1.53	9.34	8.50	7.81	8.00	1.16	1.00
.48	.28	1.03	Passed	1.79	1.65	4.53	3.76	.77	9.06	8.50	8.29	8.00	2.62*	3.00
.82	.14	.70	Inferior	1.66	1.65	8.46	2.93	2.08	13.47	10.00	11.39	10.00	.91	1.00
2.35	.24	.73	Inferior	3.32	3.30	6.83	2.63	2.07	11.53	8.00	9.46	8.00	.91*	1.00
.38	1.37	1.04	Passed	2.79	2.50	.48	7.03	4.76	12.27	11.00	7.51	9.00	.97	.80
1.86	1.37	1.36	Passed	4.59	4.74	.32	4.83	3.98	9.13	9.00	5.15	8.00	1.41	1.00
2.67	.87	.42	Passed	3.96	4.00	.61	7.07	2.88	10.56	9.50	7.68	7.50	1.03	1.00
2.03	2.14	1.12	Passed	5.29	5.00	—	5.79	4.82	10.61	9.00	5.79	6.00	1.47	1.25
1.57	.32	.97	Passed	2.86	2.50	6.44	2.28	.77	9.49	9.00	8.72	8.00	2.17	2.00
1.58	.18	1.89	Passed	3.65	3.30	5.80	2.57	1.15	9.52	9.00	8.37	8.00	2.31	2.00
2.88	.12	.07	Passed	3.07	2.47	1.02	5.69	1.07	7.78	7.00	6.71	6.00	2.00	2.00
1.11	.55	2.98	Passed	4.64	4.11	2.10	3.25	.36	5.71	5.00	5.35	4.00	1.16†	1.00
1.10	.36	.51	Passed	1.97	1.65	5.64	5.26	1.63	12.53	11.00	10.90	10.00	1.09	1.00
1.64	.41	.69	Passed	2.74	2.47	4.23	4.90	1.84	10.97	10.00	9.13	9.00	1.01	1.00
.99	.26	.52	Passed	1.77	1.65	5.55	5.14	1.28	11.97	11.00	10.69	10.00	1.07	1.00
.23	.51	.29	Passed	1.03	.82	6.00	4.77	1.53	12.30	11.00	10.77	10.00	.93	1.00
1.52	1.08	.82	Passed	3.42	3.29	4.85	4.39	1.76	11.00	10.00	9.24	9.00	1.10	1.00
—	—	—	Inferior	2.07	2.00	—	—	—	1.58	1.50	—	—	3.34	2.50
—	—	—	Inferior	1.91	2.00	—	—	—	1.63	1.50	—	—	3.47	2.50

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* No. 312-537-836 Chlorine 1.09% equivalent to 1.45% potash, 1.17% potash as sulfate.
" 206 " .45% " " .59% " .32% " " "

† Potash as sulfate.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
Carters Tested Seeds Inc., Boston, Mass.				
General Purpose Manure	Boston	Yes	402	7.58
Worm Eradicating Fertilizer	Boston	Yes	403	8.63
The E. D. Chittenden Co., Bridgeport, Conn.				
Chittenden's Comp. Tobacco and Onion Grower	Sunderland	Yes	121	5.56
Chittenden's Grass and Grain	Leominster	Yes	640	9.61
“ “ “ “	Auburn		870	
Chittenden's Potato and Grain	Leominster	Yes	641	9.69
Chittenden's Potato Special	Leominister	Yes	648	6.24
“ “ “	Auburn		808	
“ “ “	N. Wilbraham		860	
Chittenden's Tobacco Special	Sunderland	Yes	902	5.81
Chittenden's Potato Vegetable and Onion Grower	Fall River	Yes	165	6.98
“ “ “ “ “ “	Concord		390	
“ “ “ “ “ “	Oxford		768	
“ “ “ “ “ “	N. Wilbraham		859	
Clay & Sons, Stratford, England.				
Clay's Fertilizer	Boston	Yes	349	11.04
“ “	Boston		370	
Coe-Mortimer Co., 51 Chambers St., New York City.				
E. Frank Coe's Columbian Corn and Pot. Fert	Westfield	Yes	576	10.01
“ “ “ “ “ “ “	Williamsburg		884	
E. Frank Coe's New Englander Special	Concord	Yes	384	9.29
Eastern Chemical Co., Jamaica Plain, Boston, Mass.				
Imp. Plant Food	Boston	Yes	956	.97
Imp. Plant Food	Boston	Yes	957	.65
R. & J. Farquhar & Co., Boston, Mass.				
Purity Brand Pulverized Sheep Manure	Boston	Yes	344	40.54
Chas. W. Hastings, Stoughton, Mass.				
Ferti Flora	Boston	Yes	515	81.62
International Agric. Corporation, Buffalo, N. Y. (Buffalo Fertilizer Works Branch.)				
Buffalo General Favorite	Taunton	Yes	841	7.74
“ “ “	Charlemont		889	
Buffalo High Grade Manure	Dighton	Yes	162	14.65
Buffalo Potato and Corn	Dighton	Yes	158	11.26
Buffalo Potato and Corn	Hancock	Yes	975	12.03
Buffalo Potato and Truck	Taunton	No	842	11.83
Buffalo Potato and Truck	Bardwells Ferry	No	932	11.19
Buffalo Superior	Taunton	Yes	843	9.08
“ “	Charlemont		887	
Buffalo Triumph	Charlemont	Yes	888	9.14
Listers Agric. Chemical Works, Newark, N. J.				
Listers Complete Tobacco Manure	Hatfield	Yes	335	9.77
Listers Corn and Potato Fertilizer	Fall River	Yes	232	10.65
“ “ “ “ “	South Amherst		624	
“ “ “ “ “	Webster		699	
High Grade Special for Spring Crops	Amherst	No	916	10.71
“ “ “ “ “ “	Agawam		927	
Listers Potato Manure 5-8-1	Agawam	Yes	926	11.55
“ “ “ “	Amherst		940	
Listers Special Tobacco Fertilizer	Hadley	Yes	84	11.64
“ “ “ “	South Amherst		623	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K_2O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
2.19	.36	.82	Passed	3.37	3.30	1.24	4.29	2.12	7.65	6.00	5.53	5.00	1.20	1.00
.12	.10	1.70	Inferior	1.92	1.81	—	—	—	.71	.70	—	—	1.47	1.10
1.99	.22	1.04	Passed	3.25	3.29	7.17	2.01	.97	10.15	9.00	9.18	8.00	1.84*	2.00
2.19	.94	1.29	Passed	4.42	4.12	5.80	3.23	1.02	10.05	9.00	9.03	8.00	.83	1.00
1.36	.68	1.32	Passed	3.36	3.29	3.02	4.79	1.40	9.21	9.00	7.81	8.00	1.61	1.00
1.92	.19	1.29	Passed	3.40	3.29	7.08	2.16	1.40	10.64	9.00	9.24	8.00	1.96*	2.00
2.84	.12	1.72	Passed	4.68	4.52	2.55	1.34	3.00	6.89	4.00	3.89	3.00	1.05†	1.00
1.06	.28	1.21	Passed	2.55	2.47	4.94	3.30	1.28	9.52	9.00	8.24	8.00	1.20	1.00
2.51	.22	2.82	Passed	5.55	4.00	.29	4.84	5.87	11.00	7.00	5.13	1.12	.19	.08
.80	.19	.40	Passed	1.39	1.23	5.36	5.32	1.16	11.84	11.00	10.68	10.00	.91	1.00
.37	.53	.30	Passed	1.20	.82	5.04	5.23	1.14	11.41	9.00	10.27	8.00	.82	1.00
13.10	—	—	Passed	13.10	13.10	29.50	.43	—	29.93	25.30	29.93	25.30	23.18‡	24.6
13.20	—	—	Passed	13.20	13.10	25.81	.24	—	26.05	25.30	26.05	25.30	25.94‡	24.6
—	—	—	Inferior	1.29	1.25	—	—	—	1.36	.90	—	—	2.23	2.00
3.84	—	—	—	3.84	3.25	2.86	—	—	2.86	3.66	2.86	3.66	3.59†	3.30
.70	.42	.39	Inferior	1.51	.80	1.95	5.64	1.93	9.52	9.00	7.59	8.00	1.65	1.00
2.04	.59	.67	Passed	3.30	3.30	2.72	5.71	1.90	10.33	9.00	8.43	8.00	.97*	1.00
.42	.58	.80	Passed	1.80	1.60	3.06	4.56	2.61	10.23	9.00	7.62	8.00	3.98	4.00
.98	.33	.32	Inferior	1.63	1.60	4.82	4.12	1.01	9.95	9.00	8.94	8.00	3.80	4.00
1.76	.71	.54	Inferior	3.01	3.30	3.00	6.70	3.23	12.93	9.00	9.70	8.00	3.24	4.00
1.92	.77	.63	Inferior	3.32	3.30	2.40	5.95	1.11	9.46	9.00	8.35	8.00	3.28	4.00
1.43	.51	.56	Inferior	2.50	2.50	3.06	4.52	2.55	10.13	9.00	7.58	8.00	3.24	3.00
.90	.27	.65	Passed	1.82	1.60	3.16	4.46	2.56	10.18	9.00	7.62	8.00	1.88	2.00
1.73	.37	1.81	Passed	3.91	4.11	3.25	2.39	.74	6.38	5.00	5.64	4.00	1.01*	1.00
1.15	.53	.62	Passed	2.30	2.06	3.42	4.68	2.10	10.20	9.00	8.10	8.00	.91	1.00
1.28	.28	.67	Passed	2.23	2.06	4.11	4.89	1.28	10.28	11.00	9.00	10.00	.97	1.00
2.68	.49	.95	Passed	4.12	4.11	4.81	3.84	1.66	10.31	9.00	8.65	8.00	.95*	1.00
.87	.71	.59	Passed	2.17	2.06	7.02	3.12	2.72	12.86	11.00	10.14	10.00	1.03	1.00

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* No. 121 Chlorine 1.01% equivalent to 1.35% potash, .49% potash as sulfate.
" 648+ " .89% " " 1.18% " .78% " " "
† Potash as sulfate.
‡ Potash as nitrate.
* " 162 Chlorine .54% equivalent to .74% potash, .23% potash as sulfate.
* " 335 " .43% " " .58% " .43% " " "
* " 926+ " .47% " " .62% " .33% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
Listers Agric. Chemical Works. (Concluded.)				
Special Tobacco Fertilizer, 1916	Amherst	Yes	931	11.69
Standard Superphosphate of Lime	Pittsfield	Yes	943	11.23
Listers Success Fertilizer	Hadley	Yes	79	12.57
“ “ “	Webster		736	
Mapes Formula & Peruvian Guano Co., New York City.				
Mapes Corn Manure, 1916	Boston	Yes	348	11.47
“ “ “ “	Northampton		446	
“ “ “ “	Lawrence		603	
“ “ “ “	Conway		752	
Mapes General Special	Boston	Yes	347	8.61
“ “ “	Fitchburg		646	
Mapes Potato Manure	Northampton	Yes	448	11.95
“ “ “	Lawrence		599	
“ “ “	Fitchburg		647	
Mapes Tobacco Manure	Westfield	Yes	578	9.63
Mapes Tobacco Starter Improved	Westfield	Yes	579	10.12
“ “ “ “	Conway		753	
Mapes Top Dresser Half Strength, 1916	Boston	Yes	346	5.39
Mitchell Fertilizer Co., Providence, R. I.				
Vegetable Fertilizer	Rehoboth	Yes	389	11.50
National Fertilizer Co., 92 State St., Boston, Mass.				
National Eureka Potato Fertilizer, 1916	Framingham	Yes	429	10.19
National Excelsior Potato Manure	Sunderland	Yes	123	11.36
National Potato Phosphate	Framingham	Yes	430	9.96
National X X X Fish and Potash	Sunderland	Yes	124	11.08
“ “ “ “ “	North Hatfield		223	
“ “ “ “ “	Framingham		431	
“ “ “ “ “	West Springfield		830	
Natural Guano Co., Aurora, Ill.				
Sheep's Head Pulverized Sheep Manure	Brockton	Yes	416	6.05
“ “ “ “ “	Newburyport		550	
“ “ “ “ “	Beverly		591	
“ “ “ “ “	Lawrence		609	
Sheep's Head Pulverized Sheep Manure	Fitchburg	Yes	645	8.65
“ “ “ “ “	Ayer		679	
Olds & Whipple, Hartford, Conn.				
Complete Onion Fertilizer	Hadley	Yes	85	9.78
Complete Tobacco Fertilizer	Hadley	Yes	775	9.47
Parmenter & Polsey Fertilizer Co., Boston, Mass.				
A A Brand 5-8-1	Auburn	Yes	716	7.85
R. T. Prentiss, Holyoke, Mass.				
Complete for Corn and Potatoes	Easthampton	Yes	773	11.60
Complete for Corn and Potatoes	Granby	Yes	976	10.41
Complete for Top Dressing	Easthampton	Yes	774	6.86
Pulverized Manure Co., Chicago, Ill.				
Wizard Brand Cattle Manure	North Grafton	Yes	935	7.67
Wizard Brand Pulverized Sheep Manure	Fall River	Yes	136	7.76
“ “ “ “ “ “	New Bedford		180	
“ “ “ “ “ “	Amherst		304	
Rogers & Hubbard Co., Middletown, Conn.				
Hubbard's Bone Base Soluble Potato Manure	Dighton	Yes	357	14.95
“ “ “ “ “ “	Winchendon		804	
Hubbard's Tobacco Special	North Hatfield	Yes	200	12.77
Hubbard's H. G. Sol. Tobacco and Potato Manure	Deerfield	Yes	321	15.45
Hubbard's High Grade Tobacco Grower Veg. Formula	Deerfield	Yes	319	8.55
“ “ “ “ “ “ “	Deerfield		320	
“ “ “ “ “ “ “	Westfield		873	

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* No. 85 Chlorine .76% equivalent to 1.02% potash, 1.05% potash as sulfate.
“ 775 “ .25% “ “ .33% “ 1.26% “ “ “
Potash as sulfate.

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.92	.76	.63	Inferior	2.31	2.06	5.55	4.88	1.79	12.22	11.00	10.43	10.00	1.00	1.00
1.47	.31	.82	Passed	2.60	2.47	2.30	6.64	1.21	10.15	10.00	8.94	9.00	1.10	1.00
.57	.27	.58	Passed	1.42	1.23	6.79	3.77	1.07	11.63	11.00	10.56	10.00	1.03	1.00
2.16	.03	.58	Inferior	2.77	2.47	2.27	5.06	3.00	10.33	10.00	7.33	8.00	.95	1.00
4.82	.38	.97	Passed	6.17	5.76	1.70	3.86	2.53	8.09	8.00	5.56	6.00	1.40*	1.00
2.91	.25	.51	Inferior	3.67	3.71	2.59	4.67	1.82	9.08	8.00	7.26	8.00	1.05*	1.00
4.83	1.22	2.62	Passed	8.67	8.23	.36	6.82	1.52	8.70	8.00	7.18	5.00	2.11*	1.00
3.08	.14	1.11	Passed	4.33	4.12	.93	4.58	2.70	8.21	8.00	5.51	6.00	.95*	1.00
4.63	.32	.17	Passed	5.12	4.94	1.02	2.23	1.34	4.59	4.00	3.25	2.50	1.22*	.50
1.98	.59	.87	Passed	3.44	3.29	5.59	3.62	2.09	11.30	10.00	9.21	9.00	1.22	1.00
1.83	.42	.63	Passed	2.88	2.47	5.68	3.67	1.24	10.59	10.00	9.35	9.00	.55	1.00
2.47	.42	.80	Passed	3.69	3.29	4.95	5.44	.91	11.30	11.00	10.39	10.00	2.77	3.00
1.83	.49	.70	Passed	3.02	2.06	4.46	3.75	1.28	9.49	9.00	8.21	8.00	.95	1.00
1.27	.31	.78	Passed	2.36	2.06	5.46	5.33	.97	11.76	11.00	10.79	10.00	.83	1.00
—	—	—	Inferior	2.44	2.25	—	2.04	—	2.04	1.25	2.04	1.00	2.00	1.50
—	—	—	Inferior	2.48	2.25	—	—	—	1.73	1.25	—	—	1.67	1.50
.99	.60	1.26	Passed	2.85	2.45	.28	6.98	1.79	10.05	8.00	7.26	8.00	2.07*	2.00
1.07	.19	3.55	Passed	4.81	4.50	.98	2.71	.26	3.95	3.00	3.69	3.00	1.59*	1.00
2.21	.60	1.25	Passed	4.06	4.10	4.97	2.60	1.84	9.41	9.00	7.57	8.00	1.39	1.00
1.19	.50	.66	Inferior	2.35	2.47	7.59	2.03	1.22	10.84	9.00	9.62	8.00	1.10	1.00
1.87	.49	.78	Inferior	3.14	2.47	7.09	1.41	1.25	9.75	9.00	8.50	8.00	1.05	1.00
2.53	.27	1.34	Passed	4.14	4.12	4.34	2.21	1.10	7.65	5.00	6.55	4.00	1.32	1.00
—	—	—	Inferior	1.64	1.80	—	—	—	.94	1.00	—	—	1.80	1.00
—	—	—	Inferior	2.41	1.80	.83	.57	.05	1.45	1.00	1.40	1.00	2.00	1.00
2.41	.85	1.01	Passed	4.27	4.25	1.56	6.73	5.69	13.98	12.00	8.29	10.00	1.16†	1.00
1.53	.11	3.48	Passed	5.12	5.00	.89	4.80	.13	5.82	5.00	5.69	4.00	1.06†	.50
2.51	.72	1.02	Passed	4.25	4.25	.45	7.97	4.97	13.39	12.00	8.42	10.00	1.32†	1.00
1.00	.88	3.57	Passed	5.45	5.00	.18	4.21	.99	5.38	5.00	4.39	4.00	.97†	.50

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* No. 347+ Chlorine .57% equivalent to .76% potash, .64% potash as sulfate.
" 448+ " .56% " " .74% " .31% " " "
" 578 " .74% " " .99% " 1.12% " " "
" 579+ " .51% " " .67% " .28% " " "
" 346 " .59% " " .79% " .43% " " "

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
Ross Bros. Co., Worcester, Mass.				
Potato and Vegetable Fertilizer	Worcester	Yes	653	9.53
F. S. Royster Guano Co., Baltimore, Md.				
Arrow Head Tobacco Fertilizer	Deerfield	Yes	918	5.75
Drillwell Phosphate	Westfield	Yes	665	4.45
“ “	Montague		858	
Pipe of Peace Tobacco Fertilizer	South Deerfield	Yes	749	4.77
“ “ “ “	Westfield		777	
“ “ “ “	Montague		857	
Sanderson Fertilizer & Chem. Co., New Haven, Conn.				
Atlantic Coast Bone, Fish and Potash	N. Dartmouth	Yes	231	8.29
“ “ “ “ “ “	Fall River		243	
“ “ “ “ “ “	East Taunton		270	
“ “ “ “ “ “	Norton		281	
Complete Tobacco Manure, 1916	South Deerfield	Yes	36	8.00
Complete Tobacco Grower	North Amherst	Yes	314	7.99
“ “ “	Amherst		510	
“ “ “	Whately		779	
“ “ “	Southwick		794	
“ “ “	Southwick		820	
Corn Superphosphate, 1916	Dighton	Yes	273	8.50
Formula A, 1916	Norton	Yes	277	6.94
“ “ “	North Dighton		279	
“ “ “	North Amherst		315	
“ “ “	North Amherst		501	
Formula B 1916	North Dighton	Yes	276	10.05
“ “ “	Feeding Hills		661	
Kelsey's Bone, Fish and Potash, 1916	Whately	Yes	778	9.62
Potato Manure, 1916	Taunton	Yes	275	9.83
Top Dressing, 1916	Feeding Hills	Yes	662	10.88
Springfield Rendering Co., Springfield, Mass.				
Brightwood Special Vegetable and Potato Grower	West Springfield	Yes	828	6.80
Wm. Thomson & Son Ltd., Clovenfords, Scotland.				
Improved Vine, Plant and Vegetable Manure	Boston	Yes	351	6.13
“ “ “ “ “ “	Boston		371	
Virginia-Carolina Chemical Co., New York City.				
Indian Brand for Tobacco No. 2	Westfield	Yes	575	6.95
XXXX Fish and Potash	Southwick	Yes	821	6.40
Whitman & Pratt Rendering Co., Boston, Mass.				
5-8-1-Brand	Billerica	Yes	561	6.75
3-8-1 Brand	Hadley	Yes	81	9.28
“ “	Billerica		552	
“ “	Chelmsford		566	
Wilcox Fertilizer Co., Mystic, Conn.				
High Grade Vegetable Fertilizer	Dighton	Yes	377	11.60
“ “ “ “	Dighton		385	
Fish and Potash	Fall River	Yes	131	15.23
“ “ “	New Bedford		217	
“ “ “	Amherst		299	
Potato Fertilizer	Fall River	Yes	140	13.28
“ “	Amherst		300	
Potato Onion and Vegetable Phosphate	Fall River	Yes	139	9.68
“ “ “ “ “	New Bedford		216	
“ “ “ “ “	Amherst		296	

Fertilizers Furnishing Nitrogen, Phosphoric Acid and Potash.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.49	.63	.96	Passed	2.08	1.65	2.21	6.16	.10	8.47	8.50	8.37	8.00	1.00	1.00
.79	.34	2.71	Passed	3.84	4.11	2.07	2.90	1.20	6.17	4.50	4.97	4.00	1.94*	2.00
1.14	.40	.90	Passed	2.44	2.47	6.21	2.31	1.48	10.00	8.50	8.52	8.00	1.22*	1.00
.82	.63	2.57	Passed	4.02	4.11	.66	2.17	.46	3.29	3.50	2.83	3.00	1.01†	1.00
.34	.46	1.00	Passed	1.80	1.65	3.32	7.49	1.84	12.65	10.00	10.81	9.00	1.10	1.00
.97	1.77	1.85	Passed	4.59	4.53	.78	3.16	.52	4.46	4.00	3.94	3.50	1.02*	1.00
.92	.41	3.26	Passed	4.59	4.53	.57	2.85	2.22	5.64	4.00	3.42	3.00	1.05*	1.00
.47	.28	.99	Passed	1.74	1.65	1.81	8.78	2.19	12.78	11.00	10.59	10.00	.99	1.00
1.41	.86	1.23	Passed	3.50	3.29	4.30	6.34	1.96	12.60	10.00	10.64	9.00	.89*	1.00
1.05	.89	1.26	Passed	3.20	3.29	1.43	7.95	3.04	12.42	10.00	9.38	9.00	.84	1.00
1.09	.44	1.48	Passed	3.01	2.47	2.42	6.70	1.21	10.33	10.00	9.12	9.00	1.09*	1.00
.20	.69	1.17	Passed	2.06	2.06	2.23	5.98	.74	8.95	9.00	8.21	8.00	1.10	1.00
1.58	.85	1.64	Passed	4.07	4.11	2.55	7.17	1.20	10.92	9.00	9.72	8.00	1.59	1.00
1.47	1.46	.72	Passed	3.65	3.28	6.31	4.44	1.57	12.32	11.00	10.75	10.00	1.26†	1.00
1.34	.87	1.97	Passed	4.18	3.25	6.03	2.78	3.38	12.19	11.50	8.81	8.00	4.36	1.50
1.83	.21	2.18	Passed	4.22	4.12	2.17	2.47	2.91	7.55	5.00	4.64	4.00	1.10†	1.00
1.96	.39	.73	Passed	3.08	1.65	6.76	3.23	.73	10.72	8.00	9.99	8.00	1.24	1.00
2.19	.64	.92	Passed	3.75	4.10	.96	7.23	.54	8.73	9.00	8.19	8.00	1.39	1.00
.68	.71	1.07	Passed	2.46	2.46	4.18	4.22	1.06	9.46	9.00	8.40	8.00	1.12*	1.00
2.23	.42	1.48	Passed	4.13	4.12	3.83	4.87	.64	9.34	9.00	8.70	8.00	.99*	1.00
.93	.34	1.63	Passed	2.90	2.40	4.48	5.69	1.16	11.33	9.00	10.17	8.00	.58†	.50
1.29	.24	1.26	Passed	2.79	2.46	2.55	5.08	4.64	12.27	7.00	7.63	6.00	.53†	.50
1.91	.77	1.14	Passed	3.82	3.72	2.08	6.01	2.63	10.72	9.00	8.09	8.00	.70†	.50

* No. 918 Chlorine .19% equivalent to .25% potash, 1.69% potash as sulfate.
" 665+ " .25% " " .33% " .89% " " "
" 36 " .31% " " .42% " .60% " " "
" 314+ " .51% " " .69% " .36% " " "
" 277+ " .36% " " .48% " .41% " " "
" 778 " .28% " " .37% " .72% " " "
" 81+ " .49% " " .66% " .46% " " "
" 377+ " .37% " " .49% " .50% " " "

† Potash as sulfate.

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
W. H. Abbott, Holyoke, Mass.				
Animal Fertilizer	N. Hatfield	Yes	201	8.56
“ “	No. Hadley		580	
Eagle Brand	So. Hadley Falls.	Yes	663	9.85
American Agric. Chemical Co., 92 State St., Boston.				
A. Ammoniated Fertilizer	North Dighton	Yes	405	8.44
A. A. A. Ammoniated Fertilizer	Dighton	Yes	406	11.16
A. A. A. A. Ammoniated Fertilizer	Dighton	Yes	391	11.25
Cereal and Potato Fertilizer	Fall River	Yes	167	10.48
“ “ “ “	Newburyport		557	
“ “ “ “	Norwottuck		629	
Complete Tobacco Manure without Potash	Easthampton	Yes	631	5.22
“ “ “ “ “	Bradstreet		707	
Complete Tobacco Manure without Potash	Southwick	Yes	814	5.73
Extra Quality Potato Manure	Fall River	Yes	143	10.24
“ “ “ “	Taunton		267	
“ “ “ “	Easthampton		635	
Extra Quality Potato Manure	Southwick	Yes	822	11.70
“ “ “ “	South Hadley		881	
Grain and Seeding Fertilizer	Marlboro	Yes	695	8.25
High Grade Grass Top Dressing without Potash	Boston	Yes	354	7.15
“ “ “ “ “ “ “	Medway		521	
High Grade Grass Top Dressing without Potash	Maynard	Yes	871	10.68
Odorless Grass and Lawn Top Dressing without Potash	Fall River	Yes	142	8.02
“ “ “ “ “ “ “ “	New Bedford		179	
“ “ “ “ “ “ “ “	Newton L'r Falls		434	
Odorless Grass and Lawn Top Dressing without Potash	Palmer	Yes	863	10.47
Special Vegetable Fertilizer	Fall River	Yes	141	9.53
“ “ “	Taunton		266	
“ “ “	Norwottuck		627	
Bradley's General Fertilizer	Lowell	Yes	486	8.80
“ “ “	Amesbury		554	
Bradley's General Fertilizer	Southwick	Yes	813	10.03
“ “ “	Plymouth		922	
Bradley's Grain Fertilizer	Boston	Yes	285	5.41
Bradley's Grass Top Dressing without Potash	Boston	Yes	259	7.72
“ “ “ “ “ “	Walpole		471	
Bradley's Maine Potato Special	Boston	Yes	261	8.16
“ “ “ “	Boston		372	
Bradley's Maine Potato Special	Maynard	Yes	872	12.92
Bradley's Root Crop Manure	Newton L'r Falls	Yes	469	10.18
“ “ “ “	Medway		526	
“ “ “ “	Littleton		676	
Bradley's Special Corn Phosphate without Potash	Amherst	Yes	291	9.61
“ “ “ “ “ “	Boston		355	
“ “ “ “ “ “	Framingham		433	
“ “ “ “ “ “	Lowell		487	
Bradley's Special Corn Phosphate without Potash	Medway	Yes	527	10.83
Bradley's Special Potato Fertilizer without Potash	New Bedford	Yes	177	9.27
“ “ “ “ “ “	Amherst		292	
“ “ “ “ “ “	Boston		356	
“ “ “ “ “ “	Natick		438	
Bradley's Special Potato Fertilizer without Potash	Framingham	Yes	428	10.13
“ “ “ “ “ “	Chelmsford		567	

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total.					Total.		Available.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
.60	.66	2.70	Passed	3.96	3.00	.70	15.19	4.16	20.05	18.00	15.89	10.00
—	—	—	Passed	4.45	4.00	.09	13.51	5.56	19.16	15.00	13.60	8.00
.62	.14	.33	Passed	1.09	.82	5.91	4.37	1.07	11.35	11.00	10.28	10.00
1.77	.33	.61	Passed	2.71	2.47	5.87	4.04	1.80	11.71	11.00	9.91	10.00
2.37	.60	.59	Passed	3.56	3.29	6.29	3.78	2.12	12.19	11.00	10.07	10.00
1.69	.37	.57	Passed	2.63	2.47	6.19	4.17	1.89	12.25	11.00	10.36	10.00
1.06	.40	3.17	Passed	4.63	4.53	1.85	2.62	.38	4.85	4.00	4.47	3.00
.92	.87	2.85	Passed	4.64	4.53	1.11	2.56	.77	4.44	4.00	3.67	3.00
2.82	.55	.83	Passed	4.20	4.11	6.70	4.20	1.22	12.12	11.00	10.90	10.00
2.51	.83	.86	Passed	4.20	4.11	6.00	4.13	1.45	11.58	11.00	10.13	10.00
.96	.33	.60	Passed	1.89	1.65	5.93	4.00	2.47	12.40	11.00	9.93	10.00
5.35	.90	.86	Passed	7.11	6.58	5.97	3.11	.77	9.85	9.00	9.08	8.00
5.47	.66	.59	Passed	6.72	6.58	4.62	3.41	1.05	9.08	9.00	8.03	8.00
3.79	.31	.53	Passed	4.63	4.11	6.95	3.79	.82	11.56	11.00	10.74	10.00
3.93	.38	.52	Passed	4.83	4.11	6.06	4.28	.96	11.30	11.00	10.34	10.00
2.20	.65	.58	Passed	3.43	3.29	6.38	4.39	1.48	12.25	11.00	10.77	10.00
1.12	.23	.51	Passed	1.86	1.65	6.25	4.53	1.52	12.30	11.00	10.78	10.00
.97	.37	.46	Passed	1.80	1.65	5.17	4.96	1.38	11.51	11.00	10.13	10.00
.58	.15	.30	Passed	1.03	.82	5.91	5.06	1.43	12.40	11.00	10.97	10.00
4.55	.44	.51	Passed	5.50	4.94	5.55	3.66	.74	9.95	9.00	9.21	8.00
2.70	.83	.76	Passed	4.29	4.11	6.42	4.07	2.14	12.63	11.00	10.49	10.00
2.82	.76	.69	Passed	4.27	4.11	6.25	4.42	1.52	12.19	11.00	10.67	10.00
2.33	.59	.69	Passed	3.61	3.29	6.53	4.36	1.51	12.40	11.00	10.89	10.00
1.17	.25	.44	Passed	1.86	1.65	5.91	4.58	1.78	12.27	11.00	10.49	10.00
1.11	.30	.47	Passed	1.88	1.65	5.93	4.20	2.37	12.50	11.00	10.13	10.00
1.14	.31	.41	Passed	1.86	1.65	6.19	4.45	1.40	12.04	11.00	10.64	10.00
1.05	.41	.41	Passed	1.87	1.65	5.51	5.97	.20	11.68	11.00	11.48	10.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
American Agricultural Chemical Co. (Concluded.)				
Bradley's Special Potato Manure without Potash	Boston	Yes	341	10.65
" " " " " "	Lowell		485	
" " " " " "	Amesbury		522	
Bradley's Special Potato Manure without Potash	Norwood	Yes	849	12.05
Bradley's Special X L without Potash	New Bedford	Yes	178	8.38
" " " " "	Boston		342	
" " " " "	Natick		404	
" " " " "	Framingham		432	
Bradley's Universal Crop Phosphate	Westford	Yes	920	10.96
Breck's Special Lawn and Garden Dressing without Potash	Boston	Yes	287	8.73
Breck's Special Market Garden Manure without Potash	Boston	Yes	284	7.92
Farquhar's Spec. Lawn and Garden Dressing without Potash	Boston	Yes	373	11.26
Farquhar's Spec. Veg. and Potato Manure without Potash	Boston	Yes	374	12.01
Pacific Special Potato Fertilizer without Potash	Newburyport	Yes	555	10.83
" " " " " "	Spencer		718	
Pacific Special Potato Fertilizer without Potash	E. Northfield	Yes	851	10.08
Special Soluble Pacific Guano without Potash	Spencer	Yes	717	8.34
Quinnipiac Special Corn Manure	Norwottuck	Yes	628	9.37
Quinnipiac Special Potato Phosphate without Potash	Norwottuck	Yes	626	8.23
Williams and Clark Special Americus Corn Phosphate	Shelburne	Yes	906	10.13
Williams and Clark Special Americus Potato Manure	Southboro	Yes	703	8.24
Armour Fertilizer Works, Baltimore, Md.				
Armour's 5-10	Amherst	Yes	294	9.12
" "	Rehoboth		364	
" "	West Springfield		831	
Armour's Special Tobacco Grower No. 2	Springfield	Yes	899	9.50
Baugh & Sons Co., Philadelphia, Pa.				
Old Standby Dissolved Animal Base	Dighton	Yes	205	9.26
" " " " "	Dighton		376	
" " " " "	Dighton		381	
Beach Soap Co., Lawrence, Mass.				
Beach's Corn and Vegetable	Lawrence	Yes	476	5.37
Berkshire Fertilizer Co., Bridgeport, Conn.				
Ammoniated Bone Phosphate	Upton	Yes	758	9.04
Economical Grass Fertilizer	Seekonk	Yes	236	5.69
" " "	Amherst		513	
Berkshire Grass Special	South Deerfield	Yes	331	9.26
Berkshire Grass Special	Westfield	Yes	572	7.29
Market Garden Fertilizer	Hadley	Yes	39	6.32
Market Garden Fertilizer	Seekonk	Yes	246	5.18
Potato and Vegetable Phosphate	Swansea	Yes	366	9.34
" " " "	Westfield		571	
" " " "	Upton		760	
Potato and Vegetable Phosphate	Holyoke	Yes	782	15.73
Potato and Vegetable Phosphate	Swansea	Yes	358	8.88
Berkshire Root Fertilizer	Sunderland	Yes	190	6.61
" " "	North Hatfield		222	
Berkshire Special Mixture	Sunderland	Yes	182	8.93
Berkshire Special Mixture	Amherst	Yes	509	12.43
Berkshire Tobacco Grower	Sunderland	Yes	192	8.00
" " "	Sunderland		309	
" " "	South Deerfield		329	

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total.					Total.		Available.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
1.79	.39	.52	Passed	2.70	2.47	6.51	4.18	1.40	12.09	11.00	10.69	10.00
1.42	.64	.66	Passed	2.72	2.47	5.74	4.45	2.31	12.50	11.00	10.19	10.00
1.77	.44	.49	Passed	2.70	2.47	6.40	4.36	1.43	12.19	11.00	10.76	10.00
1.57	.52	.54	Passed	2.63	2.47	5.29	4.20	2.37	11.86	11.00	9.49	10.00
3.02	.49	.80	Passed	4.31	4.11	6.80	3.39	2.08	12.27	11.00	10.19	10.00
2.45	.68	.54	Passed	3.67	3.29	6.29	3.70	2.28	12.27	11.00	9.99	10.00
2.81	.62	.84	Passed	4.27	4.11	6.66	3.80	2.22	12.68	11.00	10.46	10.00
2.49	.56	.50	Passed	3.55	3.29	6.31	3.69	1.91	11.91	11.00	10.00	10.00
1.03	.25	.39	Passed	1.67	1.65	6.19	4.81	1.02	12.02	11.00	11.00	10.00
.50	.85	.61	Inferior	1.96	1.65	6.57	4.40	1.40	12.37	11.00	10.97	10.00
1.01	.27	.42	Passed	1.70	1.65	5.80	4.47	1.90	12.17	11.00	10.27	10.00
.64	.88	.64	Passed	2.16	1.65	6.67	3.37	1.95	11.99	11.00	10.04	10.00
.47	.95	.47	Passed	1.89	1.65	6.00	4.45	1.77	12.22	11.00	10.45	10.00
1.08	.37	.47	Passed	1.92	1.65	5.68	4.43	1.73	11.84	11.00	10.11	10.00
1.22	.26	.36	Passed	1.84	1.65	6.42	4.43	1.65	12.50	11.00	10.85	10.00
1.49	.65	1.92	Passed	4.06	4.11	7.72	2.69	1.45	11.86	10.50	10.41	10.00
.91	.01	3.33	Passed	4.25	4.11	2.64	1.85	1.25	5.74	4.50	4.49	4.00
1.22	.11	.56	Inferior	1.89	1.65	10.27	2.23	2.27	14.77	12.00	12.50	8.00
.23	1.13	.99	Passed	2.35	2.05	4.38	5.32	3.57	13.27	12.00	9.70	10.00
.47	.68	.63	Passed	1.78	.80	9.35	2.21	.74	12.30	11.00	11.56	10.00
5.68	1.47	.72	Passed	7.87	7.40	—	5.80	1.93	7.73	8.00	5.80	4.00
3.53	.92	1.29	Passed	5.74	5.00	4.82	1.02	.56	6.40	6.00	5.84	5.00
3.88	.92	.58	Passed	5.38	5.00	5.00	1.05	.84	6.89	6.00	6.05	5.00
1.16	.59	1.86	Passed	3.61	3.30	5.27	3.52	.98	9.77	9.00	8.79	8.00
1.27	.85	1.89	Passed	4.01	3.30	4.02	3.52	2.54	10.08	9.00	7.54	8.00
.96	.47	.76	Passed	2.19	1.70	9.29	2.10	.47	11.86	11.00	11.39	10.00
.75	.51	.72	Passed	1.98	1.70	1.03	9.29	1.36	11.68	11.00	10.32	10.00
.80	.44	.72	Passed	1.96	1.70	9.18	2.00	.38	11.56	11.00	11.18	10.00
1.22	.64	1.10	Passed	2.96	2.50	4.15	3.64	1.65	9.44	9.00	7.79	8.00
2.00	.37	2.02	Passed	4.39	3.30	2.70	7.51	1.02	11.23	9.00	10.21	8.00
4.45	.36	3.97	Passed	8.78	8.22	1.88	6.48	.77	9.13	9.00	8.36	8.00
1.31	.53	3.03	Passed	4.87	4.50	2.70	2.96	.97	6.63	6.00	5.66	5.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.				
Lawn and Garden Dressing	Fall River	Yes	170	10.99
“ “ “ “	Boston		265	
“ “ “ “	Concord		386	
Hill and Drill 4-10	Dighton	Yes	154	9.39
“ “ “ “	Boston		262	
“ “ “ “	North Amherst		316	
“ “ “ “	Fitchburg		650	
High Nitrogen Mixture without Potash	Falmouth	Yes	923	12.08
Bowker's Tobacco Grower	North Amherst	Yes	130	7.25
“ “ “	North Hatfield		221	
“ “ “	Northampton		617	
“ “ “	Southwick		818	
All Round Fertilizer 3-10	Fall River	Yes	168	9.19
“ “ “ “	Beverly		590	
“ “ “ “	Northampton		618	
“ “ “ “	Hudson		741	
Corn Fertilizer 2-10	Dighton	Yes	151	9.68
“ “ “	Natick		442	
“ “ “	Chelmsford		560	
“ “ “	Milford		772	
Corn Fertilizer 2-10	Leverett	Yes	912	10.52
Farm and Garden	Fall River	Yes	169	9.25
“ “ “	Boston		264	
“ “ “	Concord		387	
“ “ “	Natick		472	
Bowker's Potato 2-10	Boston	Yes	263	8.89
“ “ “	Natick		436	
“ “ “	Beverly		589	
“ “ “	Fitchburg		652	
Stockbridge Cereal Manure without Potash, 1916	Fall River	Yes	135	9.65
“ “ “ “ “ “	N. Hatfield		220	
“ “ “ “ “ “	North Dighton		280	
“ “ “ “ “ “	Deerfield		339	
Stockbridge Cereal Manure without Potash, 1916	Leverett	Yes	910	11.44
Stockbridge General Crop 5-8	Fall River	Yes	146	8.87
“ “ “ “	Boston		272	
“ “ “ “	Natick		443	
“ “ “ “	Fitchburg		651	
Stockbridge General Crop 5-8	Leverett	Yes	913	10.75
Stockbridge Early Crop 5-10	Natick	Yes	444	10.81
“ “ “ “	Milford		767	
“ “ “ “	Southwick		817	
E. D. Chittenden Co., Bridgeport, Conn.				
Chittenden's Comp. Tob. and Onion Grower without Pot.	Sunderland	Yes	122	8.94
“ “ “ “ “ “ “ “	Bradstreet		422	
Chittenden's Grass and Grain without Potash	Oxford	Yes	769	9.17
Chittenden's Potato Special without Potash	Hatfield	Yes	396	6.12
Chittenden's Vegetable and Onion Grower	Oxford	Yes	770	10.50
Coe-Mortimer Co., 51 Chambers St., New York City.				
Connecticut Wrapper Grower without Potash	Amherst	Yes	512	5.86
“ “ “ “ “	Easthampton		638	
“ “ “ “ “	Whately		671	

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total.					Total.		Available.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
2.80	.64	.82	Passed	4.26	4.11	6.59	3.76	2.07	12.42	11.00	10.35	10.00
2.30	.50	.66	Passed	3.46	3.29	6.06	3.89	2.09	12.04	11.00	9.95	10.00
6.16	1.04	.98	Passed	8.18	8.23	2.87	2.24	1.01	6.12	6.00	5.11	5.00
.87	.21	3.16	Passed	4.24	4.11	2.19	3.14	.33	5.66	5.00	5.33	4.00
1.71	.42	.59	Passed	2.72	2.47	5.89	3.88	2.37	12.14	11.00	9.77	10.00
1.14	.30	.49	Passed	1.93	1.65	5.74	4.09	2.14	11.97	11.00	9.83	10.00
1.53	.46	.57	Passed	2.56	1.65	6.25	3.98	1.86	12.09	11.00	10.23	10.00
1.11	.19	.50	Passed	1.80	1.65	5.00	4.85	2.45	12.30	11.00	9.85	10.00
1.24	.24	.52	Passed	2.00	1.65	6.06	3.84	2.09	11.99	11.00	9.90	10.00
2.33	.53	.61	Passed	3.47	3.29	6.12	4.21	2.04	12.37	11.00	10.33	10.00
2.22	.62	.56	Passed	3.40	3.29	6.53	3.53	1.85	11.91	11.00	10.06	10.00
2.86	.47	1.05	Passed	4.38	4.11	5.51	3.11	1.28	9.90	9.00	8.62	8.00
2.68	.65	.89	Passed	4.22	4.11	5.19	3.19	1.52	9.90	9.00	8.38	8.00
2.82	.69	.82	Passed	4.33	4.11	6.28	3.97	1.89	12.14	11.00	10.25	10.00
1.84	.50	1.07	Passed	3.41	3.29	7.87	2.74	.97	11.58	11.00	10.61	10.00
1.86	.55	1.33	Passed	3.74	4.12	8.93	2.01	1.43	12.37	11.00	10.94	10.00
.94	.90	1.66	Passed	3.50	3.29	6.02	4.26	5.00	15.28	11.00	10.28	10.00
1.26	.89	.80	Passed	2.95	2.47	8.36	2.60	1.03	11.99	11.00	10.96	10.00
1.10	.51	3.00	Passed	4.61	4.53	1.31	3.24	.55	5.10	4.00	4.55	3.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
Coe-Mortimer Co. (Concluded).				
Excelsior Potato Fertilizer, 1916	Hadley	Yes	102	9.09
“ “ “ “ “	Berlin		748	
Excelsior Potato Fertilizer, 1916	Framingham	Yes	953	11.50
High Grade Ammoniated Superphosphate	Westfield	Yes	577	10.58
“ “ “ “	South Amherst		877	
Morco Top Dresser without Potash	Framingham	Yes	954	12.48
Morco Top Dresser without Potash	Sunderland	Yes	1002	13.12
Prolific Crop Producer	Hadley	Yes	86	8.35
“ “ “	East Taunton		269	
“ “ “	Danversport		596	
“ “ “	Easthampton		637	
Top Dressing Manure, 1916	Easthampton	Yes	636	9.27
“ “ “ “	South Amherst		878	
XXV Ammoniated Phosphate	Concord	Yes	388	9.46
Essex Fertilizer Co., Boston, Mass.				
Grain, Grass and Potato Fertilizer 1-12	Webster	Yes	735	8.70
“ “ “ “ “ “	Winchendon		806	
Market Garden and Potato Manure 3½-10	Hadley	Yes	88	7.42
“ “ “ “ “ “	Leominster		644	
Potato, Corn and Vegetable 5-10	Billerica	Yes	682	8.28
“ “ “ “	Winchendon		800	
“ “ “ “ “	Pratts Junction		811	
Potato Phosphate 4-10	Easthampton	Yes	634	9.15
“ “ “	Spencer		724	
“ “ “	Pratts Junction		809	
Special Potato	North Amherst	Yes	128	9.76
Tobacco Manure 5-6	North Amherst	Yes	313	6.48
“ “ “	Easthampton		632	
XXX Fish Fertilizer for all Crops 3-10	Hadley	Yes	87	8.66
“ “ “ “ “ “ “	North Amherst		129	
“ “ “ “ “ “ “	Easthampton		633	
“ “ “ “ “ “ “	Marlboro		697	
John Glennie, North Andover, Mass.				
Superphosphate	North Andover	Yes	598	7.18
Thomas Hersom & Co., New Bedford, Mass.				
Hersom's Neverfail	New Bedford	Yes	171	8.19
A. W. Higgins, Westfield, Mass.				
Garden Special	Westfield	Yes	896	10.17
International Agricultural Corp., Buffalo, N. Y. Buffalo Fertilizer Works.				
Ammoniated Phosphate	Westhampton	Yes	939	9.10
Farmer's Choice	Bardwells Ferry	Yes	929	4.35
Onion, Vegetable and Potato Fertilizer	Hadley	Yes	40	9.82
Onion, Vegetable and Potato Fertilizer	Plainville	Yes	65	8.66
“ “ “ “ “	Hadley		100	
“ “ “ “ “	Sunderland		116	
“ “ “ “ “	Hadley		453	
Onion, Vegetable and Potato Fertilizer	South Acton	Yes	810	7.92
“ “ “ “ “	Southwick		819	
Onion, Vegetable and Potato Fertilizer	Bardwells Ferry	Yes	930	9.61
Buffalo Standard	Hadley	Yes	105	10.02
“ “	Hadley		451	
“ “	South Acton		807	
“ “	Taunton		844	

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.	
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.
2.91	.61	.83	Passed	4.35	4.11	6.35	4.01	1.96	12.32	11.00	10.36	10.00
2.58	.87	.96	Passed	4.41	4.11	4.03	5.45	3.20	12.68	11.00	9.48	10.00
1.71	.38	.54	Passed	2.63	2.47	5.59	4.14	2.13	11.86	11.00	9.73	10.00
6.26	.85	.95	Passed	8.06	8.25	2.27	3.50	1.14	6.91	6.00	5.77	5.00
6.20	1.01	1.05	Passed	8.26	8.25	1.71	4.17	.98	6.86	6.00	5.88	5.00
2.33	.50	.71	Passed	3.54	3.29	6.03	4.16	1.98	12.17	11.00	10.19	10.00
5.73	.41	.74	Passed	6.88	6.58	5.10	3.60	.87	9.57	9.00	8.70	8.00
.58	.08	.23	Passed	.89	.82	5.49	4.43	1.28	11.20	11.00	9.92	10.00
.21	.40	.36	Inferior	.97	.82	7.87	3.97	1.73	13.57	13.00	11.84	12.00
1.21	.73	.83	Passed	2.77	2.87	6.73	3.14	1.76	11.63	11.00	9.87	10.00
1.99	.93	1.18	Passed	4.10	4.10	7.49	2.67	1.30	11.46	11.00	10.16	10.00
1.24	1.03	.91	Passed	3.18	3.23	7.30	3.57	1.12	11.99	11.00	10.87	10.00
3.03	.75	.94	Passed	4.72	4.92	6.82	2.21	.92	9.95	9.00	9.03	8.00
1.30	.94	1.78	Passed	4.02	4.10	4.55	3.25	1.56	9.36	7.00	7.80	6.00
.87	.81	.78	Passed	2.46	2.46	6.73	3.48	1.53	11.74	11.00	10.21	10.00
.33	.44	1.95	Passed	2.72	2.70	2.07	13.85	4.95	20.87	18.00	15.92	15.00
2.56	.18	1.99	Passed	4.73	3.00	4.46	7.25	3.01	14.72	10.00	11.71	10.00
2.25	.07	1.22	Passed	3.54	3.40	9.44	2.83	.51	12.78	11.00	12.27	10.00
.80	.41	.84	Passed	2.05	1.20	3.74	6.54	2.73	13.01	13.00	10.28	12.00
.63	.25	.61	Passed	1.49	.80	5.06	5.91	1.43	12.40	11.00	10.97	10.00
1.37	.63	.79	Inferior	2.79	2.50	4.21	5.66	3.09	12.96	11.00	9.87	10.00
1.61	.41	.55	Passed	2.57	2.50	3.66	6.96	1.91	12.53	11.00	10.62	10.00
1.26	.73	.52	Inferior	2.51	2.50	4.27	5.54	2.05	11.86	11.00	9.81	10.00
1.92	.67	.38	Inferior	2.97	2.50	3.53	6.14	1.43	11.10	11.00	9.67	10.00
1.77	.86	.67	Passed	3.30	3.30	4.12	5.76	3.00	12.88	11.00	9.88	10.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
International Agricultural Corp., Buffalo, N. Y. Buffalo Fertilizer Works. (Concluded).				
Tobacco Grower	Hadley	Yes	41	7.76
Tobacco Grower	Plainville	Yes	60	5.04
" "	Hadley		95	
" "	Hadley		98	
" "	Hadley		104	
Tobacco Grower	Sunderland	Yes	117	5.26
" "	Hadley		456	
" "	North Hadley		581	
Tobacco Grower	Southwick	Yes	815	6.56
" "	Westfield		874	
Top Dresser	Plainville	No	64	10.00
" "	Hadley		101	
" "	Sunderland		115	
" "	Hadley		455	
Listers Agricultural Chemical Works, Newark, N. J.				
Crescent Ammoniated Superphosphate	Hadley	Yes	82	8.96
" " "	South Deerfield		252	
Excelsior Guano	South Deerfield	Yes	250	11.35
" "	Berlin		740	
Onion Fertilizer	Hatfield	Yes	340	13.72
Plant Food	Florence	Yes	945	9.83
Special Potato Fertilizer, 1916	Braggville	Yes	936	10.08
Superior Ammoniated Superphosphate	South Deerfield	Yes	251	12.71
Lowell Fertilizer Co., Boston, Mass.				
Animal Brand 3½-10	Sunderland	Yes	110	5.11
" " "	Taunton		152	
" " "	New Bedford		176	
" " "	Sunderland		193	
Animal Brand 3½-10	Somerset	Yes	235	4.65
" " "	South Deerfield		249	
" " "	Boston		350	
" " "	Brockton		414	
Animal Brand 3½-10	Webster	Yes	690	7.55
Bone Fertilizer 2½-10	Fall River	Yes	244	7.88
" " "	Lowell		488	
" " "	Millis		525	
" " "	Ipswich		549	
Empress Brand, Corn, Potatoes and Grass 1½-10	Taunton	Yes	153	7.48
" " " " " " "	South Deerfield		248	
" " " " " " "	Webster		693	
" " " " " " "	Spencer		725	
Market Garden Special, Grass and Lawn Dressing	Taunton	No	157	7.17
Market Garden Special, Grass and Lawn Dressing	Hatfield	Yes	336	7.55
Market Garden Special, Grass and Lawn Dressing	Brockton	Yes	412	7.83
Market Garden Special, Grass and Lawn Dressing	Norwood	Yes	465	8.99
Market Garden Special, Grass and Lawn Dressing	Lowell	Yes	897	5.63
Potato Corn and Vegetable 5-10	Taunton	Yes	150	7.92
" " " " "	Seekonk		237	
" " " " "	Ipswich		548	
Potato Manure 3-10	New Bedford	Yes	148	5.96
" " "	Taunton		156	
" " "	Norwood		461	
" " "	Lowell		490	

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total.					Total.		Available.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
1.72	.53	1.89	Passed	4.14	4.10	2.26	2.46	.94	5.66	5.00	4.72	4.00
1.87	.20	1.87	Passed	3.94	4.10	2.49	2.56	.87	5.92	5.00	5.05	4.00
1.85	.58	1.84	Passed	4.27	4.10	2.26	1.92	.74	4.92	5.00	4.18	4.00
1.94	.27	1.76	Passed	3.97	4.10	1.72	2.41	.87	5.00	5.00	4.13	4.00
3.80	.92	.78	Passed	5.50	5.80	.89	4.76	2.64	8.29	7.00	5.65	6.00
.66	.26	.87	Passed	1.79	1.65	6.67	3.86	2.07	12.60	11.00	10.53	10.00
1.42	.55	.65	Passed	2.62	2.47	5.77	3.77	2.14	11.68	11.00	9.54	10.00
2.48	.86	.81	Inferior	4.15	4.11	6.53	3.57	2.02	12.12	11.00	10.10	10.00
1.04	.24	.52	Passed	1.80	.82	2.31	7.88	1.75	11.94	11.00	10.19	10.00
2.33	.82	1.04	Passed	4.19	4.11	6.00	4.00	2.63	12.63	11.00	10.00	10.00
1.77	.77	.86	Passed	3.40	3.29	6.47	3.51	2.32	12.30	11.00	9.98	10.00
1.26	.75	.83	Passed	2.84	2.87	7.72	3.07	1.25	12.04	11.00	10.79	10.00
1.28	.63	.89	Passed	2.80	2.87	6.70	3.45	1.53	11.68	11.00	10.15	10.00
1.16	.91	.80	Passed	2.87	2.87	6.35	3.17	1.86	11.38	11.00	9.52	10.00
.50	.80	.78	Passed	2.08	2.05	6.38	3.48	1.14	11.00	11.00	9.86	10.00
.25	.62	.59	Passed	1.46	1.23	6.63	3.76	1.86	12.25	11.00	10.39	10.00
2.50	.70	1.46	Passed	4.66	4.92	6.44	1.88	1.07	9.39	9.00	8.32	8.00
2.56	1.10	1.25	Passed	4.91	4.92	5.61	3.89	1.22	10.72	9.00	9.50	8.00
2.48	.82	1.47	Passed	4.77	4.92	6.83	1.85	1.12	9.80	9.00	8.68	8.00
2.60	1.12	1.17	Passed	4.89	4.92	7.21	1.57	.71	9.49	9.00	8.78	8.00
2.70	.87	1.33	Passed	4.90	4.92	7.02	1.88	1.15	10.05	9.00	8.90	8.00
2.40	.55	1.19	Passed	4.14	4.10	7.74	2.36	1.66	11.76	11.00	10.10	10.00
1.31	.77	.78	Passed	2.86	2.46	6.60	3.10	1.40	11.10	11.00	9.70	10.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
Lowell Fertilizer Company. (Concluded.)				
Potato Manure 3-10	Spencer	Yes	726	8.79
" " "	Webster		734	
" " "	North Grafton		762	
Potato Phosphate 4-10	Sunderland	Yes	125	9.86
" " "	Taunton		155	
" " "	Brockton		409	
" " "	Webster		689	
" " "	Marlboro		694	
Tobacco Grower, Fruit and Vine 5-6	Sunderland	Yes	189	6.34
" " " " " "	Hatfield		337	
Mapes Formula & Peruvian Guano Co., New York City.				
5% Ammonia Special	Northampton	Yes	447	11.36
Mapes 1917 Special	Lawrence	Yes	600	10.52
James E. McGovern, Andover Mass.				
Andover Animal Fertilizer	South Lawrence	Yes	604	7.68
National Fertilizer Co., 92 State Street, Boston, Mass.				
Nitrogen Phosphate Mixture No. 2	Cordoville	Yes	933	11.10
Nitrogen Phosphate Mixture No. 3	Dighton	Yes	214	10.45
" " " "	South Deerfield		324	
" " " "	Framingham		439	
Nitrogen Phosphate Mixture No. 4	Hadley	Yes	91	8.11
" " " "	Sunderland		113	
" " " "	Sunderland		184	
" " " "	Dighton		213	
Nitrogen Phosphate Mixture No. 4	Westfield	Yes	862	10.34
Nitrogen Phosphate Mixture No. 4	Granby	Yes	994	7.66
Nitrogen Phosphate Mixture No. 5	North Hatfield	Yes	224	8.83
" " " "	Bradstreet		423	
" " " "	Bradstreet		705	
Nitrogen Phosphate Mixture No. 6	West Springfield	Yes	826	9.17
High Grade Top Dressing without Potash	Ludlow	No	937	12.57
Tobacco Special without Potash	Hadley	Yes	93	5.41
" " " "	Sunderland		114	
" " " "	Sunderland		120	
" " " "	South Deerfield		323	
" " " "	North Hadley		583	
Tobacco Special without Potash	Hadley	Yes	776	6.89
New England Fertilizer Co., 40A N. Market St., Boston.				
Corn and Grain Fertilizer 1½-10	Williamsburg	Yes	883	4.03
Corn Phosphate, Grain and Vegetable 2½-10	Taunton	Yes	159	7.73
" " " " " "	Brockton		413	
High Grade Potato Fertilizer 4-10	Brockton	Yes	418	9.69
" " " " " "	South Deerfield		427	
" " " " " "	Middleboro		543	
Potato, Corn and Vegetable Fertilizer 5-10	Taunton	Yes	163	8.65
" " " " " "	Middleboro		536	
Potato Fertilizer 3-10	Brockton	Yes	410	7.54
Special Tobacco Manure 5-6	South Deerfield	Yes	325	6.75
" " " "	South Deerfield		426	
Superphosphate High Grade, All Crops	Taunton	Yes	164	6.52
" " " " "	Sunderland		191	
" " " " "	South Deerfield		326	
" " " " "	South Deerfield		425	

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total.					Total.		Available.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
.80	.96	.79	Passed	2.55	2.46	6.41	2.86	1.67	10.94	11.00	9.27	10.00
1.56	.69	1.22	Passed	3.47	3.28	7.30	2.45	1.96	11.71	11.00	9.75	10.00
.83	1.24	2.07	Passed	4.14	4.10	4.02	2.71	1.33	8.06	7.00	6.73	6.00
3.63	.15	.40	Inferior	4.18	4.12	3.47	4.63	2.18	10.28	10.00	8.10	8.00
3.07	.05	.75	Passed	3.87	3.29	.87	7.69	1.85	10.41	10.00	8.56	8.00
.59	2.23	4.42	Passed	7.29	4.00	.85	7.16	3.60	11.61	15.00	8.01	10.32
1.02	.35	.65	Passed	2.02	1.65	2.23	7.40	2.56	12.19	11.00	9.63	10.00
1.75	.55	.53	Passed	2.83	2.47	5.65	4.45	1.58	11.68	11.00	10.10	10.00
2.19	.51	.69	Passed	3.39	3.29	6.28	4.28	1.53	12.09	11.00	10.56	10.00
2.07	.75	.59	Passed	3.41	3.29	5.14	4.37	2.23	11.74	11.00	9.51	10.00
2.44	.58	.59	Passed	3.61	3.29	5.78	3.80	2.28	11.86	11.00	9.58	10.00
2.75	.68	.91	Passed	4.34	4.11	5.10	3.52	.77	9.39	9.00	8.62	8.00
2.93	.49	.81	Passed	4.23	4.11	6.22	4.03	1.66	11.91	11.00	10.25	10.00
5.89	.92	.92	Passed	7.73	8.23	.34	5.63	1.38	7.35	6.00	5.97	5.00
1.14	.45	3.05	Passed	4.64	4.53	1.75	2.75	.59	5.09	4.00	4.50	3.00
1.08	.52	3.09	Passed	4.69	4.53	.45	3.58	.31	4.34	4.00	4.03	3.00
.08	.66	.63	Passed	1.37	1.23	6.38	3.98	.64	11.00	11.00	10.36	10.00
.70	.83	.70	Passed	2.23	2.05	6.76	3.09	1.30	11.15	11.00	9.85	10.00
1.63	.69	1.07	Passed	3.39	3.28	7.33	2.82	1.53	11.68	11.00	10.15	10.00
2.37	.37	1.25	Passed	3.99	4.10	7.97	2.03	1.61	11.61	11.00	10.00	10.00
.94	.92	.77	Passed	2.63	2.46	6.06	3.50	1.56	11.12	11.00	9.56	10.00
.79	1.10	2.09	Passed	3.98	4.10	6.79	.10	1.40	8.29	7.00	6.89	6.00
1.24	.62	.89	Passed	2.75	2.87	7.61	3.67	.74	12.02	11.00	11.28	10.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
Olds & Whipple, Hartford, Conn.				
Special High Grade Tobacco Starter	Sunderland	Yes	948	9.15
Special Grass Fertilizer	North Hatfield	Yes	227	4.50
Special Onion Fertilizer	Hadley	Yes	103	7.09
Tobacco Special Fertilizer	Hadley	Yes	89	7.68
“ “ “	Hatfield		400	
“ “ “	Hadley		450	
Parmenter & Polsey Fertilizer Co., Boston, Mass.				
Plymouth Rock Brand 3½-10	Northboro	Yes	691	5.76
Potato Fertilizer 2½-10	Millis	Yes	528	9.07
“ “ “	Littleton		678	
Special Potato and Corn Fertilizer 5-10	Littleton	Yes	675	8.17
“ “ “ “ “ “	Northboro		692	
Reading Bone Fertilizer Co., Reading, Pa.				
All Crop Special	Lexington	Yes	925	9.73
Prize Winner	Bernardston	Yes	908	8.00
Special Potato and Tobacco Manure	Bernardston	Yes	909	8.65
Rogers & Hubbard Co., Middletown, Conn.				
Rogers & Hubbard's All Soil, All Crops Phosphate	Hadley	Yes	90	6.57
“ “ “ “ “ “ “	North Hatfield		196	
“ “ “ “ “ “ “	Northampton		497	
Rogers & Hubbard's All Soil, All Crops Phosphate	Ayer	Yes	681	11.87
“ “ “ “ “ “ “	Gardner		801	
“ “ “ “ “ “ “	Winchenden		812	
Rogers & Hubbard's Complete Phosphate	Dighton	Yes	361	5.99
“ “ “ “	East Milton		613	
“ “ “ “	Ayer		673	
Rogers & Hubbard's Potato Phosphate	Ayer	Yes	672	10.61
Hubbard's Bone Base Oats and Top Dressing	North Hatfield	Yes	198	7.95
“ “ “ “ “ “ “	Dighton		362	
“ “ “ “ “ “ “	Ayer		680	
Hubbard's Bone Base Soluble Corn and General Crops	Dighton	Yes	359	13.07
“ “ “ “ “ “ “ “	Ayer		674	
Hubbard's Bone Base Soluble Tobacco Manure	Sunderland	Yes	112	9.10
“ “ “ “ “ “	North Hatfield		199	
Hubbard's Bone Base Soluble Tobacco Manure	Northampton	Yes	965	11.68
Hubbard's Bone Base Soluble Tobacco Manure	Northampton	Yes	966	12.30
Rogers & Hubbard's Valley Tobacco Brand	Hadley	Yes	454	9.42
Rogers Climax Tobacco Fertilizer	Southwick	Yes	955	11.73
Rogers High Grade Soluble Corn and Onion Manure	Sunderland	No	187	15.50
“ “ “ “ “ “ “ “	Deerfield		318	
“ “ “ “ “ “ “ “	Westfield		875	
Rogers High Grade Oats and Top Dressing	Deerfield	Yes	328	7.30
“ “ “ “ “ “ “	Westfield		879	
Rogers High Grade Soluble Tobacco Manure	Sunderland	No	186	9.43
“ “ “ “ “ “	Deerfield		317	
“ “ “ “ “ “	Deerfield		322	
F. S. Royster Guano Co., Baltimore, Md.				
Curfew Ammoniated Superphosphate	Mn'f'rs Sample	Yes	958	7.45
Royster's Good Will Ammoniated Superphosphate	Westfield	Yes	659	7.43
“ “ “ “ “	South Deerfield		750	

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total.					Total.		Available.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
3.13	.53	5.58	Passed	9.24	9.06	1.76	2.71	.91	5.38	3.00	4.47	3.00
1.57	1.24	2.59	Passed	5.40	4.95	.47	3.45	2.55	6.47	5.00	3.92	4.00
1.14	.65	1.25	Passed	3.04	2.45	2.64	4.97	2.17	9.78	8.00	7.61	8.00
1.00	.37	3.08	Passed	4.45	4.11	1.18	2.08	.46	3.72	3.00	3.26	3.00
1.23	.85	.76	Passed	2.84	2.87	7.49	2.69	1.15	11.33	11.00	10.18	10.00
.52	.86	.69	Passed	2.07	2.05	6.12	4.01	1.35	11.48	11.00	10.13	10.00
2.39	.64	1.17	Passed	4.20	4.10	8.23	2.36	1.15	11.74	11.00	10.59	10.00
.78	.47	.47	Passed	1.72	1.64	3.95	7.17	1.89	13.01	11.00	11.12	10.00
1.42	.46	.58	Passed	2.46	2.46	5.04	5.34	2.58	12.96	10.00	10.38	9.00
.49	.19	.43	Passed	1.11	.82	3.34	8.91	2.27	14.52	13.00	12.25	12.00
2.28	.45	.61	Passed	3.34	3.30	2.74	3.82	2.73	9.29	8.00	6.56	7.00
2.39	.51	.59	Passed	3.49	3.30	2.26	5.06	2.25	9.57	8.00	7.32	7.00
.20	.38	.56	Inferior	1.14	1.00	3.76	2.90	3.44	10.10	9.00	6.66	8.00
.95	.56	.58	Passed	2.09	2.00	7.21	4.66	3.95	15.82	14.00	11.87	13.00
4.69	.70	.33	Passed	5.72	6.00	.32	7.75	5.86	13.93	12.00	8.07	6.00
1.18	.43	.82	Passed	2.43	2.50	1.53	7.82	5.65	15.00	12.00	9.35	10.00
3.28	.79	1.14	Passed	5.21	5.00	.36	7.17	5.74	13.27	12.00	7.53	10.00
3.67	.67	.87	Passed	5.21	5.00	5.52	7.02	.06	12.60	12.00	12.54	10.00
3.71	.72	.81	Passed	5.24	5.00	5.52	6.90	.06	12.48	12.00	12.42	10.00
1.97	.79	1.47	Passed	4.23	4.12	.47	3.92	.79	5.18	4.00	4.39	3.00
1.77	.65	2.12	Passed	4.54	4.12	.20	2.69	2.37	5.26	4.00	2.89	3.00
1.40	.28	.90	Passed	2.58	2.50	1.53	6.65	4.50	12.68	12.00	8.18	10.00
5.45	.27	.45	Passed	6.17	6.00	.32	6.22	5.94	12.48	12.00	6.54	6.00
3.38	.80	1.01	Passed	5.19	5.00	.51	7.36	4.73	12.60	12.00	7.87	10.00
2.18	.56	1.31	Passed	4.05	3.29	5.33	2.45	.92	8.70	8.50	7.78	8.00
2.00	.41	1.54	Passed	3.95	4.11	6.59	2.59	.26	9.44	8.50	9.18	8.00

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
F. S. Royster Guano Co. (Concluded.)				
Penguin Ammoniated Superphosphate	Cheshire	Yes	893	10.45
Penguin Ammoniated Superphosphate	South Deerfield	Yes	946	7.68
Valley Tobacco Compound	Amherst	Yes	959	10.30
J. W. Sanborn, Pittsfield, N. H.				
Grass and Grain Fertilizer	Athol	Yes	962	11.85
Potato Fertilizer	Athol	Yes	961	13.20
Sanderson Fertilizer & Chem. Co., New Haven, Conn.				
Double Strength Ammonia Mixture	Dighton	No	211	12.03
“ “ “ “	Dighton		369	
High Grade Ammoniated Phosphate	Dighton	Yes	219	8.93
“ “ “ “	East Taunton		240	
“ “ “ “	Fall River		241	
“ “ “ “	Norton		278	
Phosphate without Potash	Dighton	Yes	207	6.97
“ “ “	East Taunton		268	
“ “ “	Norton		283	
Special without Potash	East Taunton	Yes	230	8.65
“ “ “	Fall River		242	
Top Dressing for Grass and Grain	South Rehoboth	Yes	365	6.89
M. L. Shoemaker & Co. Ltd., Philadelphia, Pa.				
Swift-Sure Superphosphate for Tobacco & General Use	Plainville	Yes	63	8.52
“ “ “ “ “ “ “	Sunderland		118	
“ “ “ “ “ “ “	Sunderland		185	
“ “ “ “ “ “ “	Hatfield		401	
“ “ “ “ “ “ “	Northampton		500	
“ “ “ “ “ “ “	Conway		754	
Swift-Sure Superphosphate for Tobacco & General Use	Hatfield	Yes	949	13.25
Springfield Rendering Co., Springfield, Mass.				
Animal Brand Complete Manure for All Crops	W. Springfield	Yes	825	7.37
20th Century Specialty Co., Boston, Mass.				
Scientific 12L Fertilizer	Dorchester	Yes	611	3.58
Virginia-Carolina Chemical Co., New York City.				
Tobacco and Onion Special	Hatfield	Yes	950	10.05
Whitman & Pratt Rendering Co., Boston, Mass.				
5-10 Brand	Billerica	Yes	568	7.80
“ “	Northboro		743	
1½-10 Brand	Hadley	Yes	80	8.03
“ “	Billerica		562	
3-10 Brand	Billerica	No	563	7.50
“ “	Northboro		698	
Wilcox Fertilizer Co., Mystic, Conn.				
Corn Special	Fall River	Yes	137	8.45
“ “	New Bedford		208	
“ “	Dighton		378	
Grass Fertilizer	New Bedford	Yes	215	10.15
“ “	Dighton		368	
Worcester Rendering Co., Auburn, Mass.				
Royal Worcester Complete Dressing	Auburn	Yes	710	6.67
Royal Worcester Corn and Grain	Auburn	Yes	715	6.50
Royal Worcester Potato and Vegetable Fertilizer	Marlboro	Yes	687	8.65
“ “ “ “ “ “	Auburn		722	

Fertilizers Furnishing Nitrogen and Phosphoric Acid.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.						
				Total.					Total.		Available.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insol. Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
.56	.23	.89	Passed	1.68	1.65	4.78	5.32	1.02	11.12	10.50	10.10	10.00
.80	.24	.63	Passed	1.67	1.65	6.26	4.91	.77	11.94	10.50	11.17	10.00
1.04	.25	3.25	Passed	4.54	4.11	2.76	3.26	1.66	7.68	6.50	6.02	6.00
4.48	.38	.61	Passed	5.47	4.94	3.67	4.75	.71	9.13	9.00	8.42	8.00
2.26	.62	.59	Passed	3.47	3.20	3.69	5.96	2.19	11.84	11.00	9.65	10.00
3.38	.78	1.45	Passed	5.61	6.58	4.02	5.14	1.43	10.59	9.00	9.16	8.00
1.19	.76	1.39	Passed	3.34	3.29	5.55	5.16	2.53	13.24	11.00	10.71	10.00
.39	.56	.93	Passed	1.88	1.65	5.06	5.52	2.30	12.88	11.00	10.58	10.00
.70	.68	1.04	Passed	2.42	2.47	3.64	6.75	1.91	12.30	11.00	10.39	10.00
1.17	1.25	2.21	Passed	4.63	4.11	3.25	4.91	5.59	13.75	9.00	8.16	8.00
1.08	.84	1.71	Passed	3.63	3.29	6.66	3.24	2.63	12.53	12.00	9.90	9.00
1.22	1.30	1.61	Passed	4.13	3.29	4.25	6.28	2.05	12.58	12.00	10.53	9.00
.79	1.08	.80	Passed	2.67	2.46	5.14	5.63	2.96	13.73	11.00	10.77	10.00
1.84	.15	.06	Passed	2.05	1.00	.64	1.90	.04	2.58	2.00	2.54	1.90
1.99	.59	.76	Passed	3.34	3.29	5.03	3.30	.91	9.24	8.00	8.33	8.00
2.25	.57	1.33	Passed	4.15	4.10	7.97	2.54	1.12	11.63	11.00	10.51	10.00
.23	.56	.57	Passed	1.36	1.29	5.17	4.86	2.16	12.19	11.00	10.03	10.00
.68	.86	.72	Passed	2.26	2.47	5.61	3.97	.96	10.54	11.00	9.58	10.00
.54	.81	2.15	Passed	3.50	3.26	7.59	2.30	4.01	13.90	11.00	9.89	10.00
2.37	.23	1.71	Passed	4.31	4.12	5.10	4.49	2.32	11.91	9.00	9.59	8.00
2.09	1.44	1.40	Passed	4.93	4.90	3.85	6.79	4.34	14.98	9.00	10.64	8.00
.46	1.09	1.29	Passed	2.84	2.05	3.23	10.06	4.57	17.86	11.00	13.29	10.00
1.51	1.01	1.29	Passed	3.81	3.28	3.00	7.78	5.27	16.05	11.00	10.78	10.00

Wood Ashes and Ground Rock.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
R. & J. Farquhar & Co., Boston, Mass.				
Canada Unleached Hardwood Ashes	Boston	Yes	343	14.65
John Joynt, Lucknow, Ontario, Canada.				
Canada Unleached Hardwood Ashes	North Hatfield	No	24	21.47
Canada Unleached Hardwood Ashes	North Amherst	No	25	26.26
Canada Unleached Hardwood Ashes	North Amherst	No	26	30.03
Canada Unleached Hardwood Ashes	Cushman	No	29	17.72
Canada Unleached Hardwood Ashes	Sunderland	Yes	33	21.00
Canada Unleached Hardwood Ashes	South Deerfield	Yes	34	33.08
Canada Unleached Hardwood Ashes	South Deerfield	Yes	35	28.60
Canada Unleached Hardwood Ashes	Winchester	Yes	43	17.07
Canada Unleached Hardwood Ashes	North Hatfield	Yes	197	12.30
Canada Unleached Hardwood Ashes	South Deerfield	No	253	.88
Canada Unleached Hardwood Ashes	South Deerfield	Yes	254	4.13
Canada Unleached Hardwood Ashes	Northampton	Yes	494	.97
Canada Unleached Hardwood Ashes	Northampton	Yes	495	11.15
Canada Unleached Hardwood Ashes	Worcester	No	655	15.21
Canada Unleached Hardwood Ashes	Hadley	Yes	452	12.48
Canada Unleached Hardwood Ashes	Southwick	Yes	783	4.44
Canada Unleached Hardwood Ashes	South Deerfield	Yes	833	15.52
Canada Unleached Hardwood Ashes	Fitchburg	No	834	9.70
Canada Unleached Hardwood Ashes	Sunderland	Yes	977	30.41
Canada Unleached Hardwood Ashes	Sunderland	Yes	978	29.71
Canada Unleached Hardwood Ashes	Whately	Yes	979	20.13
Canada Unleached Hardwood Ashes	Sunderland	Yes	980	23.67
Canada Unleached Hardwood Ashes	Sunderland	Yes	981	28.93
Canada Unleached Hardwood Ashes	Sunderland	Yes	982	12.05
Canada Unleached Hardwood Ashes	Sunderland	Yes	983	23.02
Canada Unleached Hardwood Ashes	Boston	No	984	1.64
Canada Unleached Hardwood Ashes	Southboro	Yes	985	20.78
Canada Unleached Hardwood Ashes	Northampton	Yes	986	13.37
Canada Unleached Hardwood Ashes	Northampton	Yes	987	18.11
Taylor Bros., Camden, N. J.				
Hardwood Ashes	Worcester	No	48	6.00
GROUND ROCK.				
Nature's Plant Food Co., Boston, Mass.				
Nature's Wonder Mineral Plant Food	Boston	Yes	601	—

Wood Ashes and Ground Rock.

Phosphoric Acid in 100 lbs.							Potash (K₂O) in 100 lbs.				
			Total.		Available.						
Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.	Acid Soluble Potash.	Calcium Oxide (Ca O) in 100 lbs.	Insoluble or Earthy Matter.
—	—	—	1.40	1.00	—	—	2.83	3.00	3.84	31.96	14.32
—	—	—	1.18	1.00	—	—	2.48	3.00	3.64	24.22	19.20
—	—	—	1.01	1.00	—	—	2.65	3.00	3.77	21.03	22.13
—	—	—	.88	1.00	—	—	2.38	3.00	2.93	17.16	23.23
—	—	—	1.01	1.00	—	—	2.26	3.00	3.11	21.21	27.86
—	—	—	1.56	1.00	—	—	5.15	3.00	6.17	26.09	14.08
—	—	—	1.28	1.00	—	—	3.14	3.00	4.23	25.26	7.31
—	—	—	1.30	1.00	—	—	3.31	3.00	4.11	30.08	8.52
—	—	—	1.06	1.00	—	—	2.16	1.00	2.95	26.34	19.89
—	—	—	1.12	1.00	—	—	2.70	2.00	3.57	20.16	30.51
—	—	—	.77	1.00	—	—	1.15	2.00	3.57	40.01	27.84
—	—	—	2.42	1.00	—	—	6.92	4.00	8.02	34.44	11.82
—	—	—	1.68	1.00	—	—	2.81	2.00	4.38	51.24	12.91
—	—	—	1.51	1.00	—	—	3.28	2.00	4.67	39.69	10.44
—	—	—	1.15	1.00	—	—	2.44	3.00	3.14	25.52	12.78
—	—	—	1.68	1.00	—	—	7.52	3.00	8.29	33.25	8.24
—	—	—	3.14	1.00	—	—	6.57	4.00	7.02	33.59	22.27
—	—	—	2.09	1.00	—	—	6.53	2.00	7.07	31.69	8.75
—	—	—	1.30	1.00	—	—	2.85	3.00	3.29	17.30	38.56
—	—	—	1.18	1.00	—	—	2.36	2.00	3.73	25.28	12.44
—	—	—	1.42	1.00	—	—	3.16	2.00	3.63	27.00	7.90
—	—	—	1.80	1.00	—	—	5.40	2.00	5.99	27.12	12.63
—	—	—	1.52	1.00	—	—	3.92	2.00	4.64	26.20	12.93
—	—	—	1.48	1.00	—	—	3.70	2.00	4.33	30.36	5.05
—	—	—	1.46	1.00	—	—	2.16	2.00	3.39	32.13	21.19
—	—	—	1.29	1.00	—	—	3.23	2.00	4.27	21.73	21.06
—	—	—	1.25	1.00	—	—	.43	2.00	2.74	29.76	38.80
—	—	—	1.07	1.00	—	—	2.89	3.00	3.37	24.71	18.51
—	—	—	1.25	1.00	—	—	3.86	2.00	4.57	33.19	15.59
—	—	—	1.22	1.00	—	—	3.78	2.00	4.32	31.15	15.94
—	—	—	.34	—	—	—	.07	—	.13	54.87	6.12
—	—	—	.22	.23	—	—	.12	—	.25*	-	83.70

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* No. 601. Potash soluble in hydrofluoric acid 2.24%.

Ground Bone, Tankage and Dry Ground Fish.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?)	Laboratory Number.	Moisture.
American Agricultural Chemical Co., Boston, Mass.				
Ground Bone	Bradstreet	Yes	55	5.39
Ground Bone	Amherst	Yes	297	5.07
“ “	Beverly		532	
Farquhar's Fine Ground Bone	Boston	Yes	363	8.33
Blood Tankage	Boston	Yes	289	11.92
Dry Ground Fish	Hadley	Yes	92	7.25
“ “ “	Northampton		127	
Dry Ground Fish	Sunderland	Yes	999	8.62
Armour Fertilizer Works, Baltimore, Md.				
Bone Meal	West Springfield	Yes	829	4.36
Tankage	Sunderland	No	311	6.39
Pure Ground Fish	North Hadley	Yes	586	7.68
Beach Soap Co., Lawrence, Mass.				
Fertilizer Bone	Lawrence	Yes	477	2.58
Berkshire Fertilizer Co., Bridgeport, Conn.				
Ground Bone	Westboro	Yes	997	4.05
Dry Ground Fish	Sunderland	Yes	183	8.23
“ “ “	Sunderland		308	
Bowker Fertilizer Co., Boston, Mass.				
Bowker's Fresh Ground Bone	Wellesley	Yes	468	6.02
“ “ “ “	Beverly		592	
Bowker's Blood Tankage	Bridgewater	Yes	608	13.73
Bowker's 6% Fine Ground Bone Tankage	Bridgewater	Yes	605	8.02
Bowker's Dry Ground Fish	South Deerfield	Yes	903	13.06
Coe-Mortimer Co., New York City.				
E. Frank Coe's Fine Ground Bone	Gill	No	854	3.98
Ground Tankage	Gill	Yes	855	9.38
Blood Tankage	North Amherst	Yes	502	15.00
Blood Tankage	Gill	Yes	856	10.98
E. D. Chittenden Co., Bridgeport, Conn.				
Chittenden's Dry Ground Fish	Sunderland	No	904	9.95
Chittenden's Dry Ground Fish	Sunderland	Yes	1001	5.63
John C. Dow & Co., Boston, Mass.				
Dow's Pure Ground Bone	Boston	Yes	258	6.55
“ “ “ “	Boston		352	
Dow's Pure Ground Bone	Beverly	Yes	533	5.90
“ “ “ “	Newburyport		551	
Dow's Ground Tankage	Concord	Yes	383	5.76
Thomas Hersom & Co., New Bedford, Mass.				
Pure Bone Meal	New Bedford	Yes	174	5.36
Meat and Bone	New Bedford	Yes	173	6.28
A. W. Higgins, Westfield, Mass.				
Tankage	Amherst	Yes	44	7.65
Tankage	Hatfield	Yes	69	7.70
Tankage	Whately	Yes	668	8.92
“	Southwick		787	
Tankage	Amherst	Yes	991	6.21
Tankage	South Deerfield	Yes	1000	7.23
Dry Ground Fish	Hadley	Yes	2	5.40
Dry Ground Fish	Hadley	Yes	3	6.46
Dry Ground Fish	Cushman	Yes	49	4.99
Dry Ground Fish	Hadley	Yes	50	5.40
Dry Ground Fish	Bradstreet	Yes	56	5.63
Dry Ground Fish	Hatfield	Yes	66	6.36
Dry Ground Fish	Southwick	Yes	789	8.52
Dry Ground Fish	Hadley	No	967	8.93

Ground Bone, Tankage and Dry Ground Fish.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Mechanical Analysis.	
				Total.					Total.		Available.			
and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Organic Nitrogen.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Fine Bone.	Coarse Bone.
—	—	—	Passed	2.70	2.47	—	—	—	23.32	22.88	—	—	55.93	44.07
—	—	—	Passed	2.86	2.47	—	—	—	25.15	22.88	—	—	84.15	15.84
—	—	—	Passed	3.09	2.47	—	—	—	23.01	22.88	—	—	55.59	44.41
—	—	—	Passed	10.41	9.87	—	—	—	4.57	—	—	—	76.30	23.70
—	—	—	Passed	8.32	8.23	.68	6.17	2.64	9.49	6.00	6.85	—	—	—
—	—	—	Passed	8.82	8.26	—	—	—	10.72	6.00	—	—	—	—
—	—	—	Passed	3.07	2.47	—	—	—	25.67	22.00	—	—	57.30	42.70
.33	1.21	5.43	Passed	6.97	7.40	.64	4.72	2.42	7.78	6.87	5.36	—	62.11	37.89
—	—	—	Passed	9.12	8.22	.96	5.39	.64	6.99	6.87	6.35	—	—	—
—	—	—	Passed	2.17	2.26	—	—	—	27.22	20.00	—	—	81.97	18.03
—	—	—	Passed	3.28	2.50	—	—	—	22.40	20.00	—	—	—	—
—	—	—	Passed	8.12	8.23	.51	4.02	2.31	6.84	6.00	4.53	—	—	—
—	—	—	Passed	2.81	2.47	—	—	—	23.80	22.90	—	—	60.62	39.38
—	—	—	Passed	10.11	9.87	.19	4.02	.64	4.85	—	4.21	—	—	—
—	—	—	Passed	5.01	4.94	—	—	—	18.34	13.73	—	—	66.16	33.84
—	—	—	Passed	7.42	8.23	—	—	3.06	15.41	6.00	12.35	—	—	—
—	—	—	Passed	2.12	2.47	—	—	—	23.42	22.98	—	—	61.12	38.88
—	—	—	Passed	8.23	7.41	—	—	—	7.93	9.15	—	—	28.70	71.30
—	—	—	Passed	10.06	9.87	—	—	—	4.83	—	—	—	57.50	42.50
—	—	—	Passed	9.88	9.87	—	—	—	5.23	—	—	—	—	—
—	—	—	Passed	8.11	8.23	—	—	.08	3.90	6.00	3.82	—	—	—
—	—	—	Passed	8.50	8.23	—	—	.96	4.31	6.00	3.35	—	—	—
—	—	—	Passed	2.30	2.00	—	—	—	25.23	24.00	—	—	78.53	21.47
—	—	—	Passed	2.55	2.00	—	—	—	24.90	24.00	—	—	52.43	47.57
—	—	—	Passed	4.39	5.00	—	—	—	19.16	14.00	—	—	46.70	53.30
—	—	—	Passed	2.28	2.00	—	—	—	27.48	24.00	—	—	78.83	21.17
—	—	—	Passed	5.06	4.00	—	—	—	17.40	16.00	—	—	73.76	26.24
.40	2.68	6.07	Passed	9.15	9.00	—	—	—	6.88	5.00	—	—	—	—
—	—	—	Passed	9.62	9.00	—	—	—	6.12	5.00	—	—	69.64	30.36
—	—	—	Passed	9.00	9.00	.28	5.20	1.43	6.91	5.00	5.48	—	67.45	32.55
—	—	—	Passed	8.52	9.00	—	—	—	8.41	5.00	—	—	—	—
—	—	—	Passed	6.97	—	—	—	—	13.02	—	—	—	60.35	39.65
.20	2.05	6.43	Passed	8.68	8.23	.79	8.61	3.74	13.14	13.00	9.40	—	—	—
.16	.57	8.26	Passed	8.99	8.23	—	—	4.46	12.81	13.00	8.35	—	—	—
—	—	—	Passed	10.06	8.23	—	—	—	11.51	13.00	—	—	—	—
.22	.57	7.78	Passed	8.57	8.23	—	—	—	14.24	13.00	—	—	—	—
.23	—	—	Passed	8.02	8.23	—	—	—	15.82	13.00	—	—	—	—
—	—	—	Passed	8.63	8.23	.57	8.90	3.16	12.63	13.00	9.47	—	—	—
—	—	—	Passed	8.91	8.23	.41	8.57	1.89	10.87	13.00	8.98	—	—	—
—	—	—	Passed	7.62	8.23	—	—	4.29	12.69	13.00	8.40	—	—	—

Ground Bone, Tankage and Dry Ground Fish.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.
A. W. Higgins, Westfield, Mass. (Concluded.)				
Dry Ground Fish	Hatfield	No	968	7.03
Dry Ground Fish	Hatfield	No	969	7.00
Dry Ground Fish	South Deerfield	Yes	970	7.22
Home Soap Co., Worcester, Mass.				
Pure Ground Bone	Millbury	Yes	712	3.82
Tankage	Leicester	No	58*	6.40
Tankage	Millbury	Yes	713	4.46
International Agric. Corp. (Buffalo Fert. Works, Branch)				
Dry Ground Fish	Plainville	Yes	61	8.47
Listers Agric. Chemical Works, Newark, N. J.				
Dry Ground Fish	Agawam	Yes	928	13.88
Lowell Fertilizer Co., Boston, Mass.				
Lowell Ground Bone	Fall River	Yes	166	3.80
Lowell Ground Tankage	Fall River	Yes	133	8.36
Lowell Dry Ground Fish	Hatfield	No	338	25.59
Geo. E. Marsh & Co., Lynn, Mass.				
Marsh's Pure Raw Bone Meal	Peabody	Yes	594	5.79
Ground Fish and Animal Tankage	Peabody	No	597	14.83
C. E. Mosher, South Deerfield, Mass.				
Ground Fish Waste	South Deerfield	Yes	247	12.42
Ground Fish Waste	South Deerfield	Yes	988	15.25
New England Dressed Meat & Wool Co., Boston, Mass.				
Bone Fertilizer	Somerville	Yes	850	6.78
New England Fertilizer Co., 40A N. Market St., Boston.				
Ground Bone	Middleboro	Yes	540	5.70
Nitrate Agencies Co., New York City.				
Ground Tankage 7-7 Brand	E. Longmeadow	No	914	8.3
High Grade Ground Tankage	E. Longmeadow	Yes	915	7.0
Rogers & Hubbard Co., Middletown, Conn.				
Hubbard's Bone Base Pure Raw Knuckle Bone Flour	East Milton	No	612	10.5
Hubbard's Pure Fine Ground Bone	North Falmouth	Yes	360	11.5
Rogers Strictly Pure Fine Bone	Pittsfield	Yes	892	5.8
Rogers Pure Raw Knuckle Bone Flour	Pittsfield	No	894	7.8
F. S. Royster Guano Co., Baltimore, Md.				
Dry Ground Fish	South Deerfield	No	947	7.6
Olds & Whipple, Hartford, Conn.				
Dry Ground Fish	North Hatfield	Yes	228	8.7
M. L. Shoemaker & Co. Ltd., Philadelphia, Pa.				
Swift-Sure Bone	Sunderland	Yes	188	3.7
Wilcox Fertilizer Co., Mystic, Conn.				
Dry Ground Fish Guano	Amherst	Yes	303	8.5
Whitman & Pratt Rendering Co., Boston, Mass.				
Ground Bone	Marlboro	Yes	688	5.6
E. H. Winter, Brockton, Mass.				
Pure Ground Bone	Brockton	Yes	919	5.2
J. M. Woodard, Greenfield, Mass.				
Unground Tankage	Greenfield	Yes	886	6.4
Worcester Rendering Co., Auburn, Mass.				
Royal Worcester Pure Ground Bone	Auburn	Yes	711	3.1
Fine Ground Tankage	Auburn	Yes	714	5.6

Ground Bone, Tankage and Dry Ground Fish.

Nitrogen in 100 lbs.						Phosphoric Acid in 100 lbs.							Mechanical Analysis.	
				Total.					Total.		Available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Organic Nitrogen.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Fine Bone.	Coarse Bone.
—	—	—	Passed	7.51	8.23	—	—	4.89	15.15	13.00	10.26	—	—	—
—	—	—	Passed	7.06	8.23	—	—	3.92	15.87	13.00	11.95	—	—	—
—	—	—	Passed	7.51	8.23	—	—	4.40	15.87	13.00	11.47	—	—	—
—	—	—	Passed	2.61	2.00	—	—	—	26.56	28.00	—	—	82.61	17.39
—	—	—	Passed	4.79	11.00	—	—	—	20.22	1.68	—	—	—	—
—	—	—	Passed	5.63	5.00	—	—	—	17.96	18.00	—	—	64.40	35.60
—	—	—	Passed	8.25	8.20	—	—	—	6.81	6.00	—	—	—	—
—	—	—	Passed	8.03	8.20	—	—	1.28	6.83	—	5.55	—	—	—
—	—	—	Passed	2.89	2.46	—	—	6.16	25.69	21.00	18.76	10.00	75.40	24.60
—	—	—	Passed	5.70	4.92	—	—	—	12.40	14.00	—	—	54.21	45.79
—	—	—	Passed	6.80	7.41	—	—	—	6.40	14.00	—	—	—	—
—	—	—	Passed	3.99	3.29	—	—	—	22.55	22.88	—	—	54.59	45.41
—	—	—	Passed	5.95	6.58	—	—	—	9.98	9.15	—	—	44.89	55.11
—	—	—	Passed	7.97	6.00	1.57	5.40	.40	7.37	6.00	6.97	—	—	—
—	—	—	Passed	7.13	6.00	—	—	—	6.32	6.00	—	—	—	—
—	—	—	Passed	3.62	3.22	—	—	—	23.55	23.48	—	—	48.57	51.43
—	—	—	Passed	2.64	2.46	—	—	—	25.82	20.00	—	—	71.22	28.78
—	—	—	Passed	5.58	5.75	—	—	—	6.86	6.86	—	—	56.80	43.20
—	—	—	Passed	6.23	8.22	—	—	—	12.53	4.57	—	—	31.75	68.25
—	—	—	Passed	3.82	3.82	—	—	—	22.98	24.70	—	—	67.80	32.20
—	—	—	Passed	1.82	2.00	—	—	—	28.94	25.00	—	—	56.50	43.50
—	—	—	Passed	3.62	3.50	—	—	—	21.58	20.00	—	—	48.40	51.60
—	—	—	Passed	3.89	3.82	—	—	—	23.16	24.70	—	—	64.90	35.10
—	—	—	Passed	7.71	8.23	—	4.23	1.49	5.72	5.00	—	—	—	—
—	—	—	Passed	9.24	8.23	.79	5.43	1.15	7.37	5.50	6.22	4.50	—	—
—	—	—	Passed	5.40	4.53	—	—	—	22.37	20.00	—	—	65.15	34.85
—	—	—	Passed	8.56	8.24	—	5.23	1.61	6.84	6.00	5.23	5.00	—	—
—	—	—	Passed	2.50	2.46	—	—	—	27.43	20.00	—	—	73.60	26.40
—	—	—	Passed	3.62	3.25	—	—	—	24.03	24.00	—	—	61.08	38.92
—	—	—	Passed	5.47	4.50	—	—	—	18.45	18.00	—	—	26.10	73.90
—	—	—	Passed	2.65	2.47	—	—	—	26.05	20.00	—	—	79.90	20.10
—	—	—	Passed	6.85	7.00	—	12.19	1.34	13.53	12.00	12.19	—	66.23	33.77

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* Prosecution and Conviction.

Lime Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Chemical Analysis of Lime Products.						
			Calcium Oxide (CaO).		Magnesium Oxide (MgO).			
		Moisture.	Found.	Guaranteed.	Found.	Guaranteed.	Carbonic Acid (CO_2).	Insoluble Matter.
BURNED AND HYDRATED OR SLAKED LIME.								
Berkshire Hills Co., Sheffield, Mass.								
Agricultural Lime	Sheffield	—	59.49	55-60	5.62	5-7	17.70	9.36
Agricultural Lime	Centerville.	—	58.86	55-60	12.42	5-7	15.67	10.02
Edward Bryant Co., Boston, Mass.								
Agricultural Lime	Boston	—	64.88	46.00	3.08	.86	8.06	2.53
Cheshire Lime Mfg. Co., Cheshire, Mass.								
Cheshire Agricultural Lime	Cheshire	—	61.31	58-70	2.51	6-2.55	27.72	.92
" " "	Cheshire							
Farnam Cheshire Lime Co., Farnams, Mass.								
Agricultural Lime	Farnams	—	70.70	60-75	1.04	2.00	16.28	1.00
Hoosac Valley Lime Co., Adams, Mass.								
Adams Agricultural Lime	Feeding Hills	—	56.92	52.60	.80	.44	24.66	5.82
New England Lime Co., Danbury, Conn.								
Adams Fresh Burned Granulated Lime	Adams	—	94.67	80-100	1.16	0-3	3.04	1.13
Adams Agricultural Lime	Adams	—	60.56	50-75	2.06	0-4	12.32	2.98
Connecticut Agricultural Lime	Amherst	—	50.86	40-65	22.11	15-45	5.10	1.65
Rockland & Rockport Lime Co., Rockland, Me.								
R. R. Land Lime	Fall River	—	64.22	60.00	1.64	.50	16.84	2.61
" " "	Concord							
" " "	Norwood							
" " "	Beverly							
" " "	W. Sp'gf'ld.							
" " "	So. Acton							
West Stockbridge Lime Co., West Stockbridge, Mass.								
West Stockbridge Agricultural Lime	West Stockbridge	—	59.68	60.00	4.24	0-15	10.74	1.49
Tobey Lime Co., West Stockbridge, Mass.								
Slaked Lime	Amherst	—	55.94	50-75	6.26	1-10	11.25	4.27
LIME ASHES.								
Edward Bryant Co., Boston, Mass.								
Lime and Wood Ashes	Boston	8.74	49.87	46.00	6.90	.86	14.38	6.90
Hoosac Valley Lime Co., Adams, Mass.								
Adams Lime Ashes	Hatfield	5.97	56.00	36.00	1.00	—	12.22	7.99
" " "	Holyoke							
Missisquoi Lime Works, Highgate Springs, Vt.								
Lime Ashes	Amherst	7.65	30.30	30-50	3.32	—	—	9.05
New England Lime Co., Danbury, Conn.								
Canaan (Conn.) Lime Ashes	Amherst	8.23	37.37	20.00	7.66	0-3	—	5.15

Lime Compounds.

Laboratory Number.	Cost of 100 lbs. of Calcium and Magnesium Oxides.	Probable Composition of Lime Products as Based upon Foregoing Analysis.						
		Free Calcium Oxide (CaO).	Free Magnesium Oxide (MgO).	Hydrated or Slaked Lime (Calcium Hydrate ($Ca[OH]_2$).	Calcium Carbonate ($CaCO_3$).	Magnesium Carbonate ($MgCO_3$).	Guaranteed Calcium and Magnesium Carbonates Combined.	Magnesium Hydrate ($Mg[OH]_2$).
A 28	$0.31a	12.60	5.62	32.16	40.26	—	35–40	—
A 41	.31a	29.46	12.42	12.45	35.65	—	35–40	—
A 9	.37c	—	—	72.16	18.33	—	—	4.46
A 26 A 37	—	2.59	2.51	30.92	63.06	—	25.00	—
A 25	—	15.71	1.04	45.22	37.03	—	50.00	—
A 16	.65c	—	—	33.67	56.10	—	.28	1.16
A 29	.57c	90.79	1.16	—	6.92	—	0–20	—
A 24	.48d	—	—	59.27	28.03	—	—	2.98
A 34	—	12.12	—	42.64	11.60	—	—	31.99
A 2 A 8 A 12 A 14 A 21 A 22	.65c	—	—	56.49	38.31	—	30.00	2.37
A 35	—	—	—	60.77	24.43	—	25.00	6.13
A 43	—	—	—	54.97	25.59	—	0–30	9.06
A 11†	.57c	—	—	41.68	32.71	—	—	9.98
A 10 A 20 †	.75b	—	—	53.41	27.80	—	—	1.45
A 38†	—	—	—	—	54.07	6.94	—	—
A 33†	—	—	—	36.48	17.42	—	—	11.08

† A 11 Total Acid Soluble Potash 1.60%.
A 10–20 " " " " .25 "
A 38 " " " " 1.32 "
A 33 " " " " 6.09 "

a. Car lots in bulk for cash f. o. b. kilns.
b. Car lots in bags for cash delivered.
c. Small lots in bags for cash at retail.
d. Car lots in bags for cash f. o. b. kilns.

Lime Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Chemical Analysis of Lime Products.						
			Calcium Oxide (CaO).		Magnesium Oxide (MgO).			
		Moisture.	Found.	Guaranteed.	Found.	Guaranteed.	Carbonic Acid (CO_2).	Insoluble Matter.
MARL AND PRECIPITATED LIME.								
Duren & Co. Inc., 453 Washington St., Boston, Mass.								
Vermarlco	Boston	5.19	50.50	49.64-51.83	.48	.31	—	1.81
The Hampton Co., Easthampton, Mass.								
Precipitated Lime	Easthampton	4.19	53.10	52.00	.97	.50	34.90	.66
International Agric. Corp., Buffalo Fertilizer Works, Buffalo, N. Y.								
Lime Carbonate, Marl	Littleton	1.41	50.75	50.00	.67	—	—	3.61
Lime Carbonate, Marl	Ashby	.83	49.24	50.00	.30	—	—	3.87
F. E. Conley Lime & Fert. Co., Utica, N. Y.								
Ground Limestone	Amherst	.06	51.56	51.50	1.36	2.30	—	4.59
Ground Limestone	Resthaven	.03	52.91	51.50	1.50	2.30	—	2.44
Edison Pulverized Limestone Co., Stewartsville, N. J.								
Edison Pulverized Limestone	Amherst	—	49.23	57.00	3.27	2.00	—	5.31
Grangers Lime Co., W. Stockbridge, Mass.								
Grangers Ground Limestone " " "	New Bedf'd W. Stock'ge	—	45.89	45-55	3.00	1-5	—	11.58
Grangers Ground Limestone	W.Stockbridge	—	52.77	45-55	.96	1-5	—	3.82
Hoosac Company, North Adams, Mass.								
Ground Limestone	N. Adams	—	54.07	53.8-54.9	.71	1-2	—	1.73
Ground Limestone	Amherst	.02	55.09	53.8-54.9	.65	1-2	—	.33
Pownal Lime Co., 92 State St., Boston, Mass.								
Pownal Ground Limestone	Amherst	.07	48.54	50-55	4.20	.5-4	—	4.14
Pownal Fine Ground Limestone	Fitchburg	—	49.91	45.00	3.97	.5-4	—	2.64
Rockland & Rockport Lime Co., Rockland, Me.								
R. R. Ground Limestone	Ayer	.06	52.10	51.00	1.56	0-5	—	4.70
Stearns Lime Co., Danbury, Conn.								
Ground Limestone	E. Taunton	.14	44.81	45.00	3.59	5.00	—	11.53
GYPSUM (Sulfate of Lime or Plaster)								
American Agric. Chem. Co., Boston, Mass.								
Fine Ground Nova Scotia Land Plaster " " " " " " " " " " " " " " " " " "	Fall River Amherst Newb'ryp't S. Acton	6.96	37.48	32.95	1.09	—	3.24	1.47
B. King & Co., New Brighton, N. Y.								
Double Ground Nova Scotia Land Plaster	Boston	6.49	36.87	32.00	1.41	—	2.06	1.48
Conn. Adamant Plaster Co., New Haven, Ct.								
Land Plaster	Pittsfield	7.43	36.74	—	1.09	—	1.34	1.22

Lime Compounds.

Laboratory Number.	Cost of 100 lbs. of Calcium and Magnesium Oxides.	Equivalent in Calcium and Magnesium Carbonates.			Mechanical Analysis: amounts (in percentages) that will pass various meshed sieves.				
		Calcium Carbonate ($CaCO_3$).	Magnesium Carbonate ($MgCO_3$).	Guaranteed Calcium and Magnesium Carbonates Combined.	100 Mesh.	80 Mesh.	60 Mesh.	40 Mesh.	20 Mesh.
A 31	—	90.12	1.00	90–97	98.91	99.11	99.55	99.73	99.98
A 19	$0.46d	79.39*	—*	82.00	100.00	—	—	—	—
A 17	.58b	90.56	1.40	98.00	56.27	58.62	67.80	76.66	89.94
A 40	.73c	87.87	.63	98.00	48.00	50.96	58.60	66.17	80.29
A 36	—	92.00	2.84	97.80	27.95	29.01	34.68	40.79	63.64
A 42	—	94.42	3.14	97.80	—	—	—	—	—
A 32	—	87.85	6.84	89.00	97.14	97.76	99.23	99.60	99.85
A 9 A 39	.82c	81.89	6.27	90.00	67.50	71.19	81.69	89.07	98.67
A 45	—	94.17	2.01	90.00	89.17	92.13	98.08	99.97	100.00
A 27	—	96.49	1.48	96–98	94.83	97.15	99.71	99.98	100.00
A 44	—	98.31	1.36	96–98	—	—	—	—	—
A 1	.17a	86.62	8.78	91.00	77.96	80.81	88.54	93.05	99.72
A 15	.65c	89.06	8.30	91.00	81.27	83.44	89.12	93.20	99.37
A 18	.61c	92.97	3.26	92.00	80.31	83.12	91.40	97.08	100.00
A 5	.72c	79.96	7.51	87.00	57.61	60.07	69.77	77.58	95.05
								Calcium Sulfate Gypsum ($CaSO_4$)	
								Found.	Guaranteed.
A 3 A 6 A 13 A 23	—	4.69	2.28	—	—	—	—	84.60	80.00
A 7	—	1.18	2.95	—	—	—	—	87.90	76.50
A 30	—	.34	2.28	—	—	—	—	88.73	—

a. Car lots in bulk for cash f. o. b. kilns.
b. Car lots in bags for cash delivered.
c. Small lots in bags for cash at retail.
d. Car lots in bags for cash f. o. b. kilns.
* 11.38% hydrated lime and 1.40% magnesium hydrate present.

Nitrogen Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.	Nitrogen in 100 lbs.	
					Found.	Guaranteed.
Amer. Agric. Chem. Co., Boston, Mass.						
High Grade Dried Blood	Boston	Yes	290	8.64	13.40*	13.16
Nitrate of Soda " " "	Dighton South Amherst	Yes	274 630	1.02	15.82	15.00
Castor Pomace	Bradstreet	Yes	421	8.56	4.53	4.53
Sulfate of Ammonia	Boston	Yes	288	.13	21.66	21.16
Beach Soap Co., Lawrence, Mass.						
Nitrate of Soda	Lawrence	Yes	480	1.70	15.46	15.00
Berkshire Fertilizer Co., Bridgeport, Conn.						
Nitrate of Soda " " "	Dighton Amherst	Yes	367 507	1.66	15.36	14.80
Nitrate of Soda	Westboro	Yes	996	.38	15.66	14.80
Castor Pomace	Amherst	Yes	506	9.74	4.80	4.52
E. B. Blood Co., Brockton, Mass.						
Electric Fertilizer and Cutworm Repeller	Boston	Yes	419	3.77	1.13	1.00
Bowker Fertilizer Co., Boston, Mass.						
Nitrate of Soda " " "	Dighton Bridgewater	Yes	160 607	1.88	16.22	15.00
Buckeye Cotton Oil Co., Cincinnati, Ohio.						
Prime Cottonseed Meal	Dighton	Yes	202	6.97	6.30	6.18
Good Cottonseed Meal	Hudson	Yes	744	6.85	5.80	5.76
Coe-Mortimer Co., 51 Chambers St., N. Y. City.						
Nitrate of Soda " " "	No. Amherst Berlin	Yes	503 746	.96	16.14	15.00
A. W. Higgins, Westfield, Mass.						
Castor Pomace	Feeding Hills	Yes	10	9.91	4.70	4.50
Castor Pomace	Feeding Hills	Yes	11	9.41	4.79	4.50
Castor Pomace	So. Deerfield	Yes	18	10.96	4.81	4.50
Castor Pomace	Bradstreet	Yes	51	9.29	4.73	4.50
Castor Pomace	Southwick	Yes	784	10.27	4.98	4.50
Castor Pomace	Westfield	Yes	993	9.18	4.84	4.50
Cottonseed Meal	Hadley	Yes	30	6.52	7.50	6.00
Cottonseed Meal	Hadley	Yes	4	7.05	7.64	6.00
Cottonseed Meal	Feeding Hills	Yes	5	7.03	7.22	6.00
Cottonseed Meal	Feeding Hills	Yes	6	7.70	7.09	6.00
Cottonseed Meal	Feeding Hills	Yes	7	7.76	7.14	6.00
Cottonseed Meal	Feeding Hills	Yes	8	7.32	7.24	6.00
Cottonseed Meal	Feeding Hills	Yes	9	6.87	7.16	6.00
Cottonseed Meal	Deerfield	Yes	13	7.75	6.79	6.00
Cottonseed Meal	Sunderland	Yes	14	7.55	6.53	6.00
Cottonseed Meal	So. Deerfield	Yes	15	9.34	6.75	6.00
Cottonseed Meal	Sunderland	Yes	16	9.22	6.83	6.00
Cottonseed Meal	Sunderland	Yes	17	9.01	7.24	6.00
Cottonseed Meal	Cushman	Yes	21	8.57	6.09	6.00
Cottonseed Meal	No. Amherst	Yes	23	8.81	6.13	6.00
Cottonseed Meal	No. Hatfield	Yes	45	8.92	5.96	6.00
Cottonseed Meal	Whately	Yes	46	8.31	6.17	6.00
Cottonseed Meal	Hadley	Yes	59	7.93	6.26	6.00
Cottonseed Meal	So. Deerfield	Yes	94	8.83	6.52	6.00
Cottonseed Meal	Whately	Yes	666	10.85	6.17	6.00
Cottonseed Meal	Southwick	Yes	786	8.55	6.01	6.00
Cottonseed Meal	Easthampton	Yes	890	9.05	6.16	6.00
Calcium Cyanimid	Hadley	Yes	30	.66	18.06	16.00
Calcium Cyanimid	Amherst	Yes	37	.70	17.93	16.00
Calcium Cyanimid	Bradstreet	Yes	54	.63	17.86	16.00
Calcium Cyanimid	Hatfield	Yes	67	.53	18.18	16.00
Calcium Cyanimid	Feeding Hills	Yes	656	1.40	18.10	16.00
Nitrate of Soda " " "	Amherst Southwick	Yes	298 788	1.76	15.16	15.00
Nitrate of Soda	Hadley	Yes	869	2.03	15.46	15.00
Nitrate of Soda	So. Deerfield	Yes	971	2.53	15.76	15.00
Sulfate of Ammonia	So. Deerfield	Yes	835	.66	21.84	20.00
Sulfate of Ammonia	Amherst	Yes	973	.07	20.84	20.00
Sulfate of Ammonia	Amherst	Yes	995	.35	20.92	20.00

* No. 290 Total phosphoric acid .41%.

NOTE.—Cottonseed meal contains on the average 2 to 3 per cent of phosphoric acid and from 1.5 to 2.5 per cent of potash, of which about 1.30% is water soluble.

Nitrogen Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.	Nitrogen in 100 lbs.	
					Found.	Guaranteed.
Humphreys-Godwin Co., Memphis, Tenn.						
Cottonseed Meal	Hatfield	Yes	70	6.58	7.52	—
Forfat Brand Cottonseed Meal	Amherst	No	57	6.72	5.96	6.17
Forfat Brand Cottonseed Meal	Brockton	Yes	417	6.60	6.16	6.17
Forfat Brand Cottonseed Meal	Oxford	Yes	755	7.49	6.29	6.17
Danish Brand Cottonseed Meal	Taunton	Yes	147	8.24	6.05	5.76
Danish Brand Cottonseed Meal	Walpole	Yes	457	8.39	5.77	5.76
Listers Agric. Chem. Works, Newark, N. J.						
Nitrate of Soda	Fall River	Yes	233	1.99	15.62	15.00
Lowell Fertilizer Co., Boston, Mass.						
Nitrate of Soda	Somerset	Yes	239	1.75	15.00	15.00
Nitrate Agencies Co., New York City.						
Nitrate of Soda	New Bedford	Yes	172	.57	16.22	15.00
Olds & Whipple Co., Hartford, Conn.						
Castor Pomace	No. Hatfield	Yes	226	11.08	4.78	4.50
Castor Pomace	Hatfield	Yes	395	7.03	5.08	5.00
Castor Pomace	Amherst	Yes	505	7.61	5.04	5.00
Castor Pomace	Hatfield	Yes	951	8.77	5.05	5.00
Sanderson Fert. & Chem. Co., New Haven, Conn.						
Nitrate of Soda	Dighton	Yes	218	1.45	15.34	15.00
J. E. Soper Co., Boston, Mass.						
Pilgrim Cottonseed Meal	Middleboro	Yes	535	7.80	6.01	6.00
Puritan Cottonseed Meal	Littleton	Yes	677	7.43	5.90	5.75
Puritan Cottonseed Meal	Holyoke	Yes	780	7.20	5.89	5.75
Union Seed & Fertilizer Co., New York City.						
American Red Tag Cottonseed Meal	Northampton	No	12	8.65	6.01	6.18
American Red Tag Cottonseed Meal	Hadley	Yes	19	7.96	6.26	6.17
American Red Tag Cottonseed Meal	Hadley	Yes	20	7.95	6.21	6.17
American Red Tag Cottonseed Meal	No. Hadley	Yes	22	7.91	6.41	6.17
American Red Tag Cottonseed Meal	No. Amherst	No	27	8.45	5.85	6.17
American Red Tag Cottonseed Meal	Sunderland	Yes	28	7.59	6.21	6.17
American Red Tag Cottonseed Meal	Hadley	Yes	42	6.97	6.18	6.17
American Red Tag Cottonseed Meal	Bradstreet	No	53	8.86	6.04	6.17
American Red Tag Cottonseed Meal	Plainville	No	62	9.28	6.07	6.17
American Red Tag Cottonseed Meal	Hatfield	Yes	71	7.64	6.35	6.17
American Red Tag Cottonseed Meal	Bradstreet	Yes	73	8.44	6.13	6.17
American Red Tag Cottonseed Meal	Bradstreet	Yes	74	7.83	6.12	6.17
American Red Tag Cottonseed Meal	Bradstreet	No	75	8.23	6.08	6.17
American Red Tag Cottonseed Meal	Bradstreet	No	76	8.21	6.07	6.17
American Red Tag Cottonseed Meal	Bradstreet	Yes	77	8.24	6.24	6.17
American Red Tag Cottonseed Meal	Hadley	Yes	78	8.40	6.20	6.17
American Red Tag Cottonseed Meal	Hatfield	No	106	9.55	6.02	6.17
American Red Tag Cottonseed Meal	Hatfield	No	107	9.26	5.94	6.17
American Red Tag Cottonseed Meal	Hatfield	No	108	9.56	5.94	6.17
American Red Tag Cottonseed Meal	Northampton	Yes	126	7.30	6.44	6.17
American Red Tag Cottonseed Meal	Hadley	Yes	194	7.80	6.32	6.17
American Red Tag Cottonseed Meal	No. Hadley	Yes	195	7.25	6.46	6.17
American Red Tag Cottonseed Meal	Amherst	No	229	8.33	6.07	6.17
American Red Tag Cottonseed Meal	Hadley	Yes	333	8.24	6.30	6.17
American Red Tag Cottonseed Meal	Whately	Yes	345	6.98	6.44	6.17
American Red Tag Cottonseed Meal	Hatfield	No	392	8.85	6.05	6.17
American Red Tag Cottonseed Meal	Hatfield	Yes	393	7.82	6.19	6.17
American Red Tag Cottonseed Meal	Hatfield	Yes	394	7.42	6.23	6.17
American Red Tag Cottonseed Meal	Northampton	No	492	8.56	6.07	6.17
American Red Tag Cottonseed Meal	Feeding Hills	No	660	8.14	6.05	6.17
American Red Tag Cottonseed Meal	Bradstreet	Yes	704	8.70	6.12	6.17
Whitman & Pratt Rendering Co., Boston, Mass.						
Nitrate of Soda	Lowell	Yes	963	1.20	15.74	14.80
Wilcox Fertilizer Co., Mystic, Conn.						
Nitrate of Soda	Fall River	Yes	132	1.65	15.60	15.00

NOTE.—Cottonseed Meal contains on the average 2 to 3 per cent of phosphoric acid and from 1.5 to 2.5 per cent of potash, of which about 1.3% is water soluble.

Phosphoric Acid Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee Substantially Met (?).	Laboratory Number.	Moisture.	Phosphoric Acid in 100 lbs.						
					Water Soluble.	Reverted.	Insoluble.	Total.		Availabl	
								Found.	Guaranteed.	Found.	Guaranteed.
PHOSPHORIC ACID COMPOUNDS.											
American Agric. Chem. Co., Boston, Mass.											
Acid Phosphate 16%	Fall River	Yes	134	6.84	12.86	4.70	.48	18.04	17.00	17.56	16.
" " "	Boston		286								
" " "	Millis		534								
Acid Phosphate 14%	Boston	Yes	257	8.72	9.50	5.62	.52	15.64	15.00	15.12	14.
" " "	Boston		353								
Ground Untreated Phosphate Rock	Weymouth	No	924	.43	—	—	—	28.83	31.12	—	—
Thomas Phosphate Powder (Basic Slag)	Boston	Yes	934	.87	—	15.78	2.56	18.34	17.00	15.78	—
Armour Fertilizer Works, Baltimore, Md.											
Acid Phosphate 16%	Middleboro	Yes	544	11.15	7.50	9.39	.51	17.40	16.50	16.89	16.
Beach Soap Co., Lawrence, Mass.											
Acid Phosphate 16%	Lawrence	Yes	569	10.75	16.01	1.95	.31	18.27	17.00	17.96	16.
Bowker Fertilizer Co., Boston, Mass.											
Bowker's Soluble Phosphate 14%	Boston	Yes	271	8.22	10.33	4.16	.77	15.26	15.00	14.49	14.
" " " "	N. Amherst		305								
" " " "	Westboro		727								
Bowker's Soluble Phosphate 14%	Leverett	Yes	911	7.93	9.72	4.98	.51	15.21	15.00	14.70	14.
Bowker's 16% Acid Phosphate	Bridgewater	Yes	606	9.71	12.63	3.98	.43	17.04	17.00	16.61	16.
Coe-Mortimer Co., New York City.											
E. Frank Coe's 16% Acid Phosphate	N. Amherst	Yes	504	6.48	12.82	4.66	.56	18.04	17.00	17.48	16.
" " " " "	Berlin		747								
E. Frank Coe's Soluble Phosphate 14%	E. Taunton	Yes	234	7.51	10.12	4.90	.41	15.43	15.00	15.02	14.
" " " " "	Gill		853								
E. Frank Coe's Basic Fruit and Legume Phos.	Maynard	Yes	901	3.38	1.34	12.05	1.15	14.54	14.00	13.39	13.
A. W. Higgins, Westfield, Mass.											
Acid Phosphate	Hadley	Yes	83	9.09	12.56	4.18	1.30	18.04	—	16.74	16.
" "	N. Amherst		307								
" "	S. Hadley Falls		664								
Acid Phosphate	Amherst	Yes	972	10.12	14.80	2.17	1.30	18.27	—	16.97	16.
Precipitated Bone	Hadley	Yes	31	8.67	4.94	23.43	3.39	31.76	26.00	28.37	26.
Precipitated Bone	Feeding Hills	Yes	32	9.60	3.66	23.32	3.28	30.26	26.00	26.98	26.
Precipitated Bone	Amherst	Yes	38	10.62	3.53	24.32	3.20	31.05	—	27.85	26.
Precipitated Bone	Hatfield	Yes	68	10.56	5.38	23.58	2.68	31.64	—	28.96	26.
Precipitated Bone	Hatfield	Yes	398	12.26	4.05	23.60	2.07	29.72	—	27.65	26.
" "	Feeding Hills		658								
" "	Whately		669								
Hudson Carbon Co., Ballston Spa, N. Y.											
Davidge's Special Phosphorus	Southboro	Yes	992	3.29	.79	2.28	12.39	15.46	5.00	3.07	—
International Agricultural Corp. (Buffalo Fertilizer Works Branch)											
Acid Phosphate 16%	Westhampton	Yes	938	7.03	12.14	4.31	1.28	17.73	17.00	16.45	16.0
National Fertilizer Co., Boston, Mass.											
Acid Phosphate	Bradstreet	Yes	52	7.44	13.20	4.12	.74	18.06	17.00	17.32	16.0
Acid Phosphate	Bradstreet	Yes	72	8.39	12.86	3.76	.42	17.04	17.00	16.62	16.0
Nitrate Agencies Co., New York City.											
Acid Phosphate 16%	New Bedford	No	181	8.41	10.52	4.48	2.42	17.42	17.00	15.00	16.0
F. S. Royster Guano Co., Baltimore, Md.											
Acid Phosphate 16%	Holyoke	Yes	730	6.03	13.29	5.18	.10	18.57	16.50	18.47	16.0
" " "	S. Williamst'n		895								
Sanderson Fert. & Chem. Co., New Haven, Conn.											
Plain Superphosphate	E. Norton	Yes	282	10.84	14.41	2.76	.51	17.68	14.00	17.17	—
Whitman & Pratt Rend. Co., Boston, Mass.											
Acid Phosphate	Mfg. Sample	Yes	964	6.55	8.16	11.33	.31	19.80	16.00	19.49	14.0
Wilcox Fertilizer Co., Mystic, Conn.											
Acid Phosphate	New Bedford	Yes	209	10.18	13.64	3.96	.11	17.71	16.50	17.60	15.5
" "	Westfield		570								

CONTROL SERIES BULLETIN No. 9 OCTOBER, 1918

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION

INSPECTION OF COMMERCIAL FERTILIZERS

By H. D. HASKINS, L. S. WALKER and H. B. PIERCE

This bulletin gives a detailed report of the fertilizer inspection for 1918. It states the number and gives an alphabetically arranged list of fertilizers registered and analyzed. Statistics in regard to sampling are given.

Summaries of wholesale quotations of crude, unmixed fertilizing ingredients are recorded. The chemical character and cost of crude stock materials are discussed, mention being made of those brands showing commercial shortages.

Statistics are given with reference to the deficiencies shown in the mixed complete fertilizers and ammoniated superphosphates, brands showing commercial shortages of 50 cents or over per ton being listed.

The quality of the nitrogen, phosphoric acid and potash contained in mixed goods is discussed, special attention being directed to those brands which contained inferior forms of organic nitrogen.

A brief discussion of lime products is followed by some forty pages devoted to tables of analyses, showing in detail the composition, both found and guaranteed, of each brand of fertilizer or fertilizer materials sold in the State.

Requests for bulletins should be addressed to the
AGRICULTURAL EXPERIMENT STATION
AMHERST, MASS.

PUBLICATION OF THIS DOCUMENT
APPROVED BY THE
SUPERVISOR OF ADMINISTRATION.

DEPARTMENT OF CHEMISTRY.

J. B. Lindsey, *Chemist.*

INSPECTION OF COMMERCIAL FERTILIZERS

FOR THE SEASON OF 1918.

BY H. D. HASKINS, CHEMIST IN CHARGE, ASSISTED BY L. S. WALKER, H. B. PIERCE, A. B. BEAUMONT[1] AND MARY E. GARVEY.[1]

NEW FERTILIZER LAW.

The gradual reduction in the number of registered fertilizer brands, year after year, by the different fertilizer manufacturers has been a serious menace to the income of the fertilizer section of the Experiment Station. The inspection of fertilizers has been dependent wholly for its income upon registration or analysis fees: $8 for each ingredient contained in each brand of fertilizer and $12 for each brand of agricultural lime.

The question of eliminating the registration or analysis fee altogether and substituting a straight tonnage fee was given prominent consideration, but did not appeal to the fertilizer manufacturers, who favored increasing the registration fee. It was felt that this would work a hardship upon the small operator, and therefore a supplementary tonnage fee of 6 cents was finally adopted. The full text of the new law follows: —

Chapter 220, General Acts of 1918.

An Act relative to the Sale of Commercial Fertilizers.

Be it enacted, etc., as follows:

Section 1. Chapter three hundred and eighty-eight of the acts of nineteen hundred and eleven is hereby amended by striking out section six, and substituting the following: — *Section 6.* When the certified copy of the label of any brand of fertilizer has been filed, and the proper fees have been paid, the director of the Massachusetts Agricultural Experiment Station shall issue or cause to be issued a certificate to that effect; and the certificate shall be deemed to authorize the sale in this commonwealth, in compliance with this act, of the brand of fertilizer for which the certificate is issued up to and including the thirty-first day of December of the year for which it is issued. The director of the Massachusetts Agricul-

Director to issue certificate of registration when conditions are fulfilled.

Director or deputy may refuse or cancel certificate if statements are misleading.

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[1] Assisted for one month in phosphoric acid laboratory.

tural Experiment Station or his authorized deputy may refuse to issue a certificate for any fertilizer or brand of fertilizer which does not contain at least one half of one per cent of nitrogen, or one half of one per cent of potash soluble in distilled water, or one per cent of phosphoric acid, or five per cent of lime, or five per cent of magnesia, or which contains its potash or phosphoric acid or lime or magnesia in forms substantially insoluble by the methods of analysis for commercial fertilizers prescribed by the Association of Official Agricultural Chemists of North America, or which does not possess substantial properties as a fertilizer. The said director or his deputy may also refuse to issue a certificate for any fertilizer under a name, brand, or trade mark which is untrue in any particular, or which, in his opinion, would be misleading or deceptive in any particular, or would tend to mislead or deceive as to the constituents or properties of said fertilizer. The director or his deputy may refuse to issue more than one certificate for any fertilizer under the same name or brand, or to issue a certificate for any fertilizer under a name or brand to the use of which the party is not lawfully entitled. Should a certificate be issued for any fertilizer and it be discovered afterward that the certificate itself, or the granting of it, or the manner of procuring it, was in any respect in violation of any provision of this act, the said director and his authorized deputy, shall have power to cancel the certificate. No commercial fertilizer or brand of fertilizer shall be sold or offered or exposed for sale until a certificate has been issued by the director or his authorized deputy, and any manufacturer, importer, or other person who shall sell, or offer or expose for sale a fertilizer or brand of fertilizer for which no certificate has been issued, or the certificate for which has been cancelled, shall be punished by a fine not exceeding two hundred dollars for each offence.

Penalty for obstructing director or deputy. Director may prescribe rules and regulations. Prosecutions at discretion of director.

SECTION 2. Section nine of chapter three hundred and eighty-eight of the acts of nineteen hundred and eleven is hereby amended by inserting after the word "with," in the tenth line, the words: — he may prescribe and enforce such rules and regulations relative to the sale of commercial fertilizers as he may deem necessary to carry into effect the full intent and meaning of this act, — so as to read as follows: — *Section 9.* Any person hindering or obstructing the director of the Massachusetts Agricultural Experiment Station, or any inspector or deputy of the said director, in the discharge of the authority or duty conferred or imposed by any provision of this act and any person violating any provision of sections one, two, three, four and five of this act shall be fined not less than fifty dollars and not more than two hundred dollars for each offence. It shall be the duty of the said director to see that the provisions of this act are complied with, he may prescribe and enforce such rules and regulations relative to the sale of commercial fertilizers as he may deem necessary to carry into effect the full intent and meaning of this act and he may, in his discretion, prosecute or cause to be prosecuted any person violating any provision of this act. But no complaint based upon an analysis of samples shall be made for any such violation, if the samples were taken otherwise than as provided in this act. And no complaint shall be made for a failure of any fertilizer or brand of fertilizer to meet the guaranteed analysis thereof if the analysis of such fertilizer made by the director, or by his deputy or deputies, shows the amounts of the constituents thereof to be substantially equivalent to the percentages stated in the label of the fertilizer.

Declaration of tonnage sold and payment of fee. Penalty for failure to comply with requirements of this section.

SECTION 3. In addition to the requirements of section five of chapter three hundred and eighty-eight of the acts of nineteen hundred and eleven, every manufacturer, importer or other person who sells or offers or exposes for sale in this commonwealth any commercial fertilizer shall, on or before the first day of January and July in each year, beginning with January, nineteen hundred and nineteen, file with the director of the Massachusetts Agricultural Experiment Station a sworn statement in such form as the director may prescribe setting forth the number of net tons of fertilizer sold by him in the commonwealth during the preceding six months, stating in each case the number of tons of every brand sold, together with a permit allowing the director or his authorized deputy to examine the books of the person filing the statement, for the purpose of verifying the same, and shall thereupon pay to the director a fee of six cents a ton of two thousand pounds for the fertilizers so sold, except that no such statement, permit or fee shall be required in respect of agricultural lime. The said director or his authorized deputy shall have power to cancel the certificate for any brand of fertilizer in respect to which the requirements of this section have not been complied with, and any manufacturer, importer or other person who shall sell or offer or expose for sale in this commonwealth a fertilizer or brand of fertilizer without having filed the statement and permit and paid the fee required by this section shall be punished by a fine not exceeding five hundred dollars for each offence. But no agent or other person shall be obliged to file a statement or permit, or pay the fee required by this section, for any brand of fertilizer for which the statement and permit have been filed and for which the fee has been paid by the manufacturer or importer of such brand. The director is hereby authorized and it is made his duty to collect the fee required by this section, and to turn over the same to be accounted for and disbursed in accordance with the provisions of section ten of said chapter three hundred and eighty-eight. [*Approved May 21, 1918.*

Remarks. — As will be seen, this supplementary law, in section 1, defines certain conditions which must be fulfilled or registration may be refused. The substitution of section 1 of the new law for section 6 of the old law gives a working basis for the executive to pass upon certain features which have developed within recent years and which could not have been foreseen when chapter 388 of the Acts of 1911 was passed.

Section 2 simply gives the executive somewhat more freedom in prescribing and enforcing such rules and regulations as may be necessary to facilitate the smooth working of the act.

Section 3, the most important section of the act, will, it is hoped, provide adequate income for carrying on the inspection work. It is not known for a certainty just how much the 6-cent supplementary tonnage fee will increase the revenue for this work, as no reliable statistics are available as to the tonnage of fertilizer sold in the State. It may be necessary later to increase this tonnage fee if our estimates have been too high in regard to tonnage of fertilizer sold.

To facilitate the working of this section, there will be forwarded to each registrant, prior to January 1 and July 1 of each year, a blank form upon which returns shall be made to this office regarding the fertilizer tonnage sold in the State during the preceding six months. This declaration of tonnage should, of course, be accompanied by the proper remittance, made payable to the Director of the experiment station, and on January 1 may also be accompanied by the properly executed affidavit, together with remittance for the registration of brands to be sold for the new year.

MANUFACTURERS AND BRANDS.

During the season of 1918, 93 manufacturers, importers and dealers, including the various branches of the trusts, have secured certificates for the sale of 408 brands of fertilizer, fertilizing materials and agricultural limes in the markets of Massachusetts. They may be classed as follows: —

Complete fertilizers,	123
Ammoniated superphosphates,	163
Ground bone, tankage and dry ground fish,	37
Wood ashes,	4
Chemicals and organic nitrogen compounds,	51
Agricultural limes,	29
Ground rock,	1
	408

Following is an alphabetical list of manufacturers and dealers who have registered fertilizers and lime compounds for sale in the State during the season, together with the brands registered by each.

W. H. Abbott, Holyoke, Mass.
Animal Fertilizer.
Eagle Brand Fertilizer.

Alphano Humus Co., Whitehall Building, New York, N. Y.
Prepared Alphano Humus.

Alpha Portland Cement Co., Easton, Pa.
Alpha Potash-Lime Fertilizer.

American Agricultural Chemical Co., 92 State St., Boston, Mass.
A. A. C. Co.'s Ammoniated Fertilizer A.
A. A. C. Co.'s Ammoniated Fertilizer AA.
A. A. C. Co.'s Ammoniated Fertilizer AAA.
A. A. C. Co.'s Ammoniated Fertilizer AAAA.
A. A. C. Co.'s High Grade Acid Phosphate.
A. A. C. Co.'s Top Dresser, 1916.
Cereal and Root Fertilizer.
Complete Tobacco Manure without Potash.
Extra Quality Potato Manure.
Fine Ground Bone.
Fine Ground Nova Scotia Plaster.
Five-Eight Fertilizer.
General Crop Grower, 1916.
Grain and Seeding Fertilizer.
High Grade Fertilizer, 1916.
High Grade Grass Top Dressing without Potash.
Nitrate of Soda.
Odorless Grass and Lawn Top Dressing without Potash.
Plain Superphosphate (14 per cent.).
Plain Superphosphate (16 per cent.).
Pulverized Sheep Manure.
Special Vegetable Fertilizer.

Triumph Crop Special.
Valley Tobacco Fertilizer.
Bradley's Complete Manure for Potatoes and Vegetables, 1916.
Bradley's Corn Phosphate, 1916.
Bradley's Extra Potato and Root Special.
Bradley's Grain Fertilizer.
Bradley's Liberty Brand Potato Manure.
Bradley's Maine Potato Special.
Bradley's Northland Potato Grower.
Bradley's Potato Fertilizer, 1916.
Bradley's Potato Manure, 1916.
Bradley's Root Crop Manure.
Bradley's Special Eclipse Phosphate.
Bradley's Special Corn Phosphate without Potash.
Bradley's Special Potato Fertilizer without Potash.
Bradley's Special Potato Manure without Potash.
Bradley's Special XL Superphosphate without Potash.
Bradley's XL Superphosphate of Lime, 1916.
Breck's Extra Lawn and Garden Dressing without Potash.
Breck's Extra Market Garden Manure.
Church's Fish and Potash D, 1916.
Farquhar's Fine Ground Bone.
Farquhar's Special Lawn and Garden Dressing without Potash.
Farquhar's Special Vegetable and Potato Fertilizer without Potash.
Great Eastern Garden Special, 1916.
Great Eastern General, 1916.
Great Eastern Northern Corn Special, 1916.
Great Eastern Potato Manure, 1916.
Pacific Special Potato Fertilizer without Potash.
Packers' Union Animal Corn Fertilizer, 1916.
Packers' Union Potato Manure, 1916.
Packers' Union Universal Fertilizer, 1916.
Quinnipiac Market Garden Manure, 1916.
Quinnipiac Special Corn Manure without Potash.
Quinnipiac Special Potato Phosphate without Potash.
Special Soluble Pacific Guano without Potash.
Wheeler's Corn Fertilizer, 1916.
Wheeler's Potato Manure, 1916.
Williams & Clark Special Americus Corn Phosphate without Potash.
Williams & Clark Special Americus Potato Manure without Potash.

Ames Plow Co., Quincy Hall, Boston, Mass.
North's Wood Ashes.

Armour Fertilizer Works, 1501 Munsey Building, Baltimore, Md.
Acid Phosphate (16 per cent.).
Armour's 1–8–2.
Armour's 2–8–3.
Armour's 2–10–0.
Armour's 4–8–3.
Armour's 4–10–0.
Bone Meal.
Nitrate of Soda.
Sheep Manure.
Special Tobacco Grower, No. 1.
Special Tobacco Grower, No. 2.
Wheat, Corn and Oats Special, 1–7–1.

Beach Soap Co., Lawrence, Mass.
Acid Phosphate.
Beach's Advance Fertilizer.
Beach's Corn and Vegetable Fertilizer.
Beach's Fertilizer Bone.
Nitrate of Soda.

Berkshire Fertilizer Co., Bridgeport, Conn.
Berkshire Ammoniated Bone Phosphate.
Berkshire Complete Fertilizer.
Berkshire Dry Ground Fish.
Berkshire Grass Special.
Berkshire Market Garden Fertilizer.
Berkshire Potato and Vegetable Phosphate.
Berkshire Root Fertilizer.
Berkshire Tobacco Grower.
Nitrate of Soda.

Berkshire Hills Co., Sheffield, Mass.
Agricultural Lime.

Bon Arbor Chemical Co., Paterson, N. J.
Bon Arbor Unsurpassed Soluble Plant Life.

Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.
Bowker's Acid Phosphate (16 per cent.).
Bowker's Ammoniated Food for Flowers.
Bowker's Complete.
Bowker's Fine Ground Nova Scotia Plaster.
Bowker's Four Ten Hill and Drill.
Bowker's Fresh Ground Bone.
Bowker's High Nitrogen Mixture, 1916, without Potash.
Bowker's Lawn and Garden Dressing, 1918.
Bowker's Nitrate of Soda.
Bowker's One Ten Sure Crop.
Bowker's Potato Phosphate, 1916.
Bowker's Soluble Phosphate.
Bowker's Three Ten All Round.
Bowker's Tobacco Grower, 1916.
Bowker's Two Ten Farm and Garden.
Stockbridge Five Eight General Crop.
Stockbridge General Crop Manure, 1916.
Stockbridge Market Garden Manure.

Jos. Breck & Sons Corp., 51 N. Market St., Boston, Mass.
Breck's Brighton Sheep Manure.
Breck's Ram's Head Brand Sheep Manure.
Breck's Wood Ashes.

F. W. Brode & Co., 40 S. Front St., Memphis, Tenn.
Owl Brand Cottonseed Meal.

Edward Bryant Co., 23 Central St., Boston, Mass.
Agricultural Lime.
Lime and Wood Ashes.

Buckeye Cotton Oil Co., Cincinnati, Ohio.
Buckeye Cottonseed Meal.

Butchers Rendering Co., Fall River, Mass.
Ground Tankage.

Carters Tested Seeds Inc., 102 Chamber of Commerce, Boston, Mass.
Carters Anti-Clover Manure.
Carters Complete Grass Manure.
Carters General Purpose Manure.
Carters Worm Eradicating Fertilizer.

Cheshire Lime Manufacturing Co., Cheshire, Mass.
Cheshire Agricultural Lime.

The E. D. Chittenden Co., Bridgeport, Conn.
Chittenden's Complete Tobacco and Onion Grower, 1 per cent. Potash.
Chittenden's Complete Tobacco and Onion Grower without Potash.
Chittenden's Complete Tobacco and Onion Grower, 2 per cent. Potash.
Chittenden's Grass and Grain without Potash.
Chittenden's Tobacco Special without Potash.
Chittenden's Vegetable and Onion Grower without Potash.
Chittenden's Vegetable and Onion Grower, 1 per cent. Potash.

The Coe-Mortimer Co., 51 Chambers St., New York, N. Y.
E. Frank Coe's Basic Fruit and Legume Phosphate (Basic Lime Phosphate) (Key Plow Brand).
E. Frank Coe's Celebrated Special Potato Fertilizer Revised.
E. Frank Coe's Columbian Corn and Potato Fertilizer, 1916.
E. Frank Coe's Connecticut Wrapper Grower without Potash.
E. Frank Coe's Excelsior Potato Fertilizer, 1916.
E. Frank Coe's High Grade Ammoniated Superphosphate, 1916.
E. Frank Coe's High Grade Soluble Phosphate.
E. Frank Coe's Morcoe Top Dresser without Potash.
E. Frank Coe's New Englander Special, 1916.
E. Frank Coe's Original Ammoniated Dissolved Phosphate, 1916.
E. Frank Coe's Prolific Crop Producer, 1916.
E. Frank Coe's Standard Potato Fertilizer, 1916.
E. Frank Coe's Superphosphate (16 per cent.).
E. Frank Coe's Tobacco Special.
E. Frank Coe's Top Dressing Manure, 1916.
E. Frank Coe's XXV Ammoniated Phosphate, 1916.
Fine Ground Bone.
Nitrate of Soda.

F. E. Conley Stone Co., Utica, N. Y.
Raw Ground Lime.

Connecticut Adamant Plaster Co., New Haven, Conn.
Land Plaster.

J. A. Creighton & Co., Thomaston, Me.
Creighton's Agricultural Lime.

John C. Dow Co., 148 State St., Boston, Mass.
Dow's Garden Fertilizer.
Dow's Ground Tankage.
Dow's Pure Ground Bone.

Edison Pulverized Limestone Co., Stewartsville, N. J.
Edison Pulverized Limestone.

Essex Fertilizer Co., 39 N. Market St., Boston, Mass.
Acid Phosphate.
Essex Fish Fertilizer.
Essex Grain, Grass and Potato Fertilizer.
Essex High Grade 5–8.
Essex Market Garden.
Essex Potato Phosphate.
Essex Special 6–8.
Essex Tobacco Manure.
Essex 2–8–4.
Essex 4–8–2.
Essex 4–8–4.
Nitrate of Soda.

Farnam Cheshire Lime Co., Farnams, Mass.
Agricultural Lime.

R. & J. Farquhar & Co., 6 & 7 S. Market St., Boston, Mass.
Canada Hardwood Ashes.
Sheep Manure.

Federal Chemical Co., Lincoln Bank Building, Louisville, Ky.
Daybreak Tennessee Brown Phosphate Rock.

Fertile Chemical Co., Cleveland, Ohio.
Lime-Fertile.
Nitro-Fertile.

John Glennie, Ward Hill, Mass.
Superphosphate.

Grangers Lime Co., West Stockbridge, Mass.
Agricultural Limestone.

The Hampton Co., Easthampton, Mass.
Precipitated Lime.

Chas. W. Hastings, 76 Center St., Dorchester Center, Mass.
Ferti-Flora.

Thos. Hersom & Co., New Bedford, Mass.
Acid Phosphate.
Bone Meal.
Meat Meal.
Neverfail.

A. W. Higgins, Westfield, Mass.
Acid Phosphate.
Brode's 43 per cent. Cottonseed Meal.
Castor Pomace.
Dry Fish.
Flue Dust.
Garden Fertilizer.
Ground Tankage.
Manure Ashes.
Nitrate of Soda.
Precipitated Bone.
Sulfate of Ammonia.
Tankage.

Home Soap Co., Worcester, Mass.
Pure Ground Bone.
Tankage.

Hoosac Valley Lime Co. Inc., Adams, Mass.
Adams Agricultural Lime.
Adams Lime Ashes.

Hudson Carbon Co., Ballston Spa, N. Y.
Davidge's Special Phosphorus.

Humphreys-Godwin Co., 20 N. Front St., Memphis, Tenn.
Danish Brand Cottonseed Meal.
Dixie Brand Cottonseed Meal.
Forfat Brand Cottonseed Meal.

International Agricultural Corporation (Buffalo Fertilizer Works Branch), Buffalo, N. Y.
Buffalo Ammoniated Phosphate.
Buffalo Economy.
Buffalo Farmers Choice.
Buffalo Garden Truck.
Buffalo General Favorite.
Buffalo High Grade Manure.
Buffalo New England Special.
Buffalo Onion, Vegetable and Potato.
Buffalo Tip Top.
Buffalo Tobacco Grower.
Buffalo Top Dresser.
Buffalo Triumph.

John Joynt, Lucknow, Ontario, Can.
Unleached Hardwood Ashes.

J. B. King & Co., 17 State St., New York, N. Y.
Land Plaster.

George A. Lawrence, Holyoke, Mass.
Lime Ashes.

Listers Agricultural Chemical Works, Newark, N. J.
Listers Celebrated Tobacco Fertilizer without Potash.
Listers Complete Tobacco Fertilizer without Potash.
Listers Complete Tobacco Manure, 1916.
Listers Corn and Potato Fertilizer, 1916.
Listers Crescent Ammoniated Superphosphate, 1916.
Listers Excelsior Guano, 1916.
Listers High Grade Special for Spring Crops, 1916.
Listers Onion Fertilizer.
Listers Plant Food, 1916.
Listers Potato and Corn No. 2 Fertilizer, 1916.
Listers Potato Manure, 1916.
Listers Special Potato Fertilizer, 1916.
Listers Special Tobacco Fertilizer, 1916.
Listers Standard Pure Superphosphate of Lime, 1916.
Listers Success Fertilizer, 1916.
Listers Superior Ammoniated Superphosphate, 1916.

Lowell Fertilizer Co., 40 N. Market St., Boston, Mass.
Lowell Acid Phosphate.
Lowell Animal Brand.
Lowell Bone Fertilizer.
Lowell Empress Brand.
Lowell Ground Bone.
Lowell High Grade 5–8.
Lowell Nitrate of Soda.
Lowell Potato Manure.
Lowell Potato Phosphate.
Lowell Tankage 6–30.
Lowell Tobacco Grower.
Lowell 2–8–2.
Lowell 2–8–4.
Lowell 4–8–4.

Mapes Formula & Peruvian Guano Co., 143 Liberty St., New York, N. Y.
Mapes Corn Manure (1916 Brand).
Mapes Five Per Cent. Ammonia Special.
Mapes General Special (1916 Brand).
Mapes Potato Manure (1916 Brand).
Mapes Tobacco Manure (1916 Brand).
Mapes Tobacco Starter, Improved.
Mapes Top Dresser, Full Strength (1916 Brand).
Mapes Top Dresser, Half Strength (1916 Brand).

Geo. E. Marsh Co., Lynn, Mass.
Dry Ground Fish and Animal Tankage.
Fertilizer Bone.

Jas. E. McGovern, Andover, Mass.
Andover Animal Tankage.

Missisquoi Lime Works, St. Albans, Vt.
Ground Limestone.

C. E. Mosher, South Deerfield, Mass.
Fish Scraps.

National Fertilizer Co., 92 State St., Boston, Mass.
National Complete Root and Grain Fertilizer, 1916.
National Eureka Potato Fertilizer, 1916.
National Extra High Grade Potato Fertilizer.
National Market Garden Revised Fertilizer.
National Nitrogen Phosphate Mixture, No. 2.
National Nitrogen Phosphate Mixture, No. 3.
National Nitrogen Phosphate Mixture, No. 4.
National Nitrogen Phosphate Mixture, No. 5.
National Nitrogen Phosphate Mixture, No. 6.
National Pine Tree State Potato Fertilizer.
National Plain Superphosphate (16 per cent.).

National Potato Phosphate, 1916.
National Special High Grade Top Dressing without Potash.
National Tobacco Manure 5–4.
National Tobacco Special without Potash.
National Universal Grain and Potato Fertilizer.
National XXX Fish and Potash, 1916.

National Plant Food Co., Pensacola, Fla.
Red Snapper Plant Food.

Natural Guano Co., Aurora, Ill.
"Sheep's Head" Pulverized Sheep Manure.

Nature's Plant Food Co., 12 S. Market St., Boston, Mass.
Nature's Plant Food.

New England Dressed Meat & Wool Co., 41 N. Market St., Boston, Mass.
Bone Fertilizer.
Sheep Manure Fertilizer.

New England Fertilizer Co., 40A N. Market St., Boston, Mass.
New England Corn Phosphate.
New England High Grade 5–8.
New England High Grade Potato Fertilizer.
New England Potato Fertilizer.
New England Special Tobacco Manure.
New England Standard Phosphate.
New England Superphosphate.

New England Lime Co., Danbury, Conn.
Adams (Mass.) Agricultural Lime.
Adams (Mass.) Fresh Burned Granular Lime.
Connecticut Agricultural Lime.
Connecticut Lime Ashes.

Niagara Gypsum Co., Buffalo, N. Y.
Niagara Land Plaster.

Nitrate Agencies Co., 104 Pearl St., New York, N. Y.
N. A. C. Brand Acid Phosphate.
N. A. C. Brand Ground Bone.
N. A. C. Brand Ground Dried Blood.
N. A. C. Brand Ground High Grade Tankage.
N. A. C. Brand Ground Tankage.
N. A. C. Brand Nitrapo.
N. A. C. Brand Nitrate of Soda.

Olds & Whipple, Hartford, Conn.
Olds & Whipple's Complete Corn, Onion and Potato Fertilizer.
Olds & Whipple's Dry Ground Fish.
Olds & Whipple's Special High Grade Starter.
Olds & Whipple's Special Onion, Corn and Potato Fertilizer.
Olds & Whipple's Tobacco Special Fertilizer.

Parmenter & Polsey Fertilizer Co., 41 N. Market St., Boston, Mass.
P. & P. Corn and Grain Fertilizer.
P. & P. Ground Bone.
P. & P. High Grade 5–8.
P. & P. Potato Fertilizer.
P. & P. Potato Phosphate.
P. & P. Special Tobacco and Onion Grower.
P. & P. Star Brand Superphosphate.

Pownal Lime Co., 92 State St., Boston, Mass.
Pownal Agricultural Limestone.

Pulverized Manure Co., Union Stock Yards, Chicago, Ill.
Wizard Brand Cattle Manure.
Wizard Brand Sheep Manure.

Reading Bone Fertilizer Co., Reading, Pa.
Reading All Crop Special.
Truck, Fruit, Tree, Vine, Potato and Tobacco Grower.

Rockland & Rockport Lime Co., Rockland, Me.
R–R Ground Limestone.
R–R Land Lime.

Rogers & Hubbard Co., Middletown, Conn.
Hubbard's "Bone Base" Oats and Top Dressing.
Hubbard's "Bone Base" Soluble Corn and General Crops Manure.
Hubbard's "Bone Base" Soluble Potato Manure.
Hubbard's Pure Raw Knuckle Bone Flour.
Hubbard's Strictly Pure Fine Bone.
Rogers & Hubbard's All-Round Phosphate.
Rogers & Hubbard's All Soils–All Crops Phosphate.
Rogers & Hubbard's "Bone Base" Soluble Tobacco Manure.
Rogers & Hubbard's Climax Tobacco Brand.
Rogers & Hubbard's Complete Phosphate.
Rogers & Hubbard's Potato Phosphate.
Rogers & Hubbard's Tobacco Grower (Vegetable Formula).

Ross Bros. Co., Worcester, Mass.
Corn, Grass and Grain.
High Grade Potato and Vegetable Fertilizer.
Home Garden Vegetable Fertilizer.
Special Potato and Vegetable Fertilizer.
Spring Grass Top Dressing.
Worcester Special Lawn Dressing.

F. S. Royster Guano Co., 1604 Munsey Building, Baltimore, Md.
Royster's C. B. Fish Mixture.
Royster's Corn and Oats Fertilizer.
Royster's Dreadnought Fertilizer.
Royster's Drillwell Phosphate.
Royster's Fish and Potash Mixture.

Royster's High Grade Acid Phosphate (16 per cent.).
Royster's Innovation Ammoniated Superphosphate.
Royster's Landmark Ammoniated Phosphate.
Royster's Overland Top Dresser.
Royster's Penguin Ammoniated Superphosphate.
Royster's Perfecto Tobacco Formula.
Royster's Pipe of Peace Tobacco Fertilizer.

Sanderson Fertilizer & Chemical Co., New Haven, Conn.
Sanderson's Acid Phosphate.
Sanderson's Atlantic Coast Bone, Fish and Potash, 1916.
Sanderson's Corn Superphosphate, 1916.
Sanderson's Double Strength Ammonia Mixture.
Sanderson's Formula A, 1916.
Sanderson's Formula B, 1916.
Sanderson's High Grade Ammoniated Phosphate.
Sanderson's Nitrate of Soda.
Sanderson's Phosphate without Potash.
Sanderson's Plain Superphosphate (14 per cent.).
Sanderson's Potato Manure, 1916.
Sanderson's Special without Potash.
Sanderson's Tobacco Grower, 1916.
Sanderson's Top Dressing for Grass and Grain, 1916, without Potash.

M. L. Shoemaker & Co., Venango St. & Delaware Ave., Philadelphia, Pa.
Swift-Sure Bone Meal.
Swift-Sure Phosphate for Tobacco and General Use.

J. E. Soper & Co., 206 Chamber of Commerce, Boston, Mass.
Pilgrim Cottonseed Meal.
Puritan Cottonseed Meal.

Springfield Rendering Co., Springfield, Mass.
Springfield Acid Phosphate.
Springfield Animal Fertilizer for All Crops.
Springfield Ground Bone.
Springfield Market Garden Grower and Top Dresser.
Springfield Special Potato, Onion and Vegetable.

Wm. Thomson & Sons, Ltd., Clovenfords, Scotland.
Thomson's Special Chrysanthemum Manure.
Thomson's Vine, Plant and Vegetable Manure.

Tobey Lime Co., West Stockbridge, Mass.
Tobey Agricultural Lime.

20th Century Specialty Co., 317 Adams St., Dorchester, Mass.
"Scientific" 12L.

Union Seed & Fertilizer Co., 65 Broadway, New York, N. Y.
Surety Brand Cottonseed Meal.

Virginia-Carolina Chemical Co., 120 Broadway, New York, N. Y.
V. C. C. Co.'s Indian Brand for Tobacco (C. S. M. without Potash).
V. C. C. Co.'s Indian Brand for Tobacco, No. 2 (C. S. M. with Sulfate).
V. C. C. Co.'s Tobacco and Onion Special.
V. C. C. Co.'s XXXX Fish and Potash Mixture.

Whitman & Pratt Rendering Co., 15 Exchange St., Boston, Mass.
Whitman & Pratt's Ammoniated Phosphate.
Whitman & Pratt's Corn Success.
Whitman & Pratt's Ground Bone.
Whitman & Pratt's Potato Manure.
Whitman & Pratt's Vegetable Grower.
2–8–2 Brand.
2–8–4 Brand.
4–8–4 Brand.

Wilcox Fertilizer Co., Mystic, Conn.
Wilcox Acid Phosphate.
Wilcox Corn Special.
Wilcox Fish and Potash.
Wilcox Grain Fertilizer.
Wilcox Grass Fertilizer.
Wilcox Nitrate of Soda.
Wilcox Potato, Onion and Vegetable Phosphate.
Wilcox Tobacco Special.

S. Winter Co., Brockton, Mass.
Pure Ground Bone.

Witherbee, Sherman & Co., Port Henry, N. Y.
Mineral Phosphate with Sulphide of Barium (Barium-Phosphate).

J. M. Woodard, Greenfield, Mass.
Unground Tankage.

Worcester Rendering Co., Auburn, Mass.
Royal Worcester Complete Dressing.
Royal Worcester Corn and Grain Fertilizer.
Royal Worcester Potato and Vegetable Fertilizer.
Royal Worcester Pure Ground Bone.

COLLECTION OF SAMPLES.

The collection of fertilizer samples has been in charge of Mr. James T. Howard, assisted by Mr. William L. Dowd, who covered the greater part of the State, excepting the Connecticut Valley and adjacent districts, where the sampling was done largely by Mr. Daniel Dowd. Although the reduction in the number of brands registered for sale in the State naturally reduced the number of brands and samples taken by the inspectors, yet the statistics show that nearly double the tonnage was sampled as compared with the previous year. The actual spring collection began the last week in March, and prior to that date many carloads of wood ashes, cottonseed meal and fertilizer materials for home mixing were sampled and analyzed. This early inspection work is done almost wholly upon request of the purchaser. It is felt that it is an important feature of the inspection work, particularly as it precludes the probability of such samples being improperly taken and submitted for analysis by the purchaser.

The following statistics have been gathered in regard to the 1918 collection: sacks sampled 17,784, representing 9,086 tons of fertilizer; 111 towns were visited; 981 samples, representing 380 distinct brands, were drawn from stock found in the possession of 322 different agents or owners.

FERTILIZERS ANALYZED.

Six hundred and eighteen analyses (371 distinct brands) have been made during the year's inspection. Five hundred and ninety-six of these are published in this bulletin. Twenty-two analyses have not been published. They were largely private mixtures, officially collected but not registered. The registered brands analyzed are as follows: —

	Analyses.	Brands.
Complete fertilizers, ...	133	108
Ammoniated superphosphates, ...	214	151
Ground bone, tankage and dry ground fish, ...	53	35
Nitrogen compounds, ...	70	24
Phosphoric acid and potash compounds, ...	39	25
Wood ashes, ...	52	4
Lime compounds, ...	35	25

FERTILIZER TRADE VALUES.

No schedule of trade values of fertilizing materials has been attempted, as it was recognized that the excessive and widely fluctuating prices which have prevailed would make such a list of little value. In order to make a record of the prices charged for certain of the better known crude stock fertilizing materials, the following table has been prepared: —

Name of Material.	Wholesale Ton Quotations taken from the Oil, Paint and Drug Reporter.			Average of Several Retail Quotations made in February, 1918.
	For Six Months preceding Mar. 1, 1917.	For Six Months preceding Mar. 1, 1918.	Oct. 1, 1918.	
Ammonium sulfate,	$85 43	$142 47	$95 00	–
Nitrate of soda,	62 30	94 79	86 50	$95 00
Dried blood,	46 14	78 16	90 62	125 00
Tankage (9 and 20),	34 49	57 43	63 20	–
Dry ground fish,	43 32	–	92 12	–
Ground bone (3 and 50),	24 58	–	37 00	41 15
Cottonseed meal (6.17 per cent. nitrogen),	43 22	54 08	57 35	–
Acid phosphate (16 per cent.),	11 43	16 63	18 00	21 67
Muriate of potash,	425 00	343 00	260 00	–
High-grade sulfate of potash,	288 00	334 79	325 00	–

GENERAL INFORMATION CONCERNING REGISTERED RAW PRODUCTS AND CHEMICALS.

Ground Bone. — Thirty-nine samples have been inspected during the season, necessitating 23 analyses. Ground bone has averaged 3.10 per cent. of nitrogen and 24.65 per cent. of phosphoric acid. The average retail cash price per ton has been $48.84. On the whole the guarantees on ground bone have been well maintained, none of the brands showing a commercial shortage.

Ground Tankage. — Seventeen samples of tankage have been inspected, necessitating 14 analyses. No deficiencies were found in nitrogen. Three brands showed rather serious deficiencies in phosphoric acid. These deficiencies, however, were more than made up by an over-run in nitrogen, so that no commercial shortage resulted. The average total nitrogen found was 5.90 per cent. The average phosphoric acid found was 13.22 per cent. The average retail cash price has been $63.40 per ton. Assuming that the pound of phosphoric acid in tankage is worth 5 cents, the cost of a pound of nitrogen from this source would have been 42.5 cents.

Dry Ground Fish. — Sixteen samples of fish were inspected, necessitating 16 analyses. Three samples were found deficient in nitrogen and three in phosphoric acid. The average retail cash price has been $88.83 per ton. The average total nitrogen found was 7.86 per cent. The average phosphoric acid was 8.53 per cent. Allowing 6 cents as the value of a pound of phosphoric acid, the nitrogen in dry ground fish would have cost, on the average, 50 cents per pound. Two brands showed a commercial shortage.

Berkshire Fertilizer Co. — Berkshire Dry Ground Fish, No. 113: nitrogen found, 8.04 per cent., guaranteed, 8.23 per cent.; phosphoric acid found, 6.15 per cent., guaranteed, 6 per cent.

One other sample, No. 156, showed a small commercial shortage: nitrogen found, 8.13 per cent., guaranteed, 8.23 per cent.; phosphoric acid found, 6.17 per cent., guaranteed 6 per cent.

Two other samples of the same brand showed no commercial shortage.

George E. Marsh Co. — Ground Fish and Animal Tankage, No. 566: nitrogen found, 4.65 per cent., guaranteed, 6.58 per cent; phosphoric acid found, 14.57 per cent., guaranteed, 9.15 per cent.

Another sample forwarded by the manufacturer, and said to be a representative sample, showed no commercial shortage, although over 1 per cent. deficient in phosphoric acid. This would indicate that insufficient care in making the mixture might have been responsible for the deficiencies, or possibly the trouble was due to a lack of data as to the exact chemical composition of the products which went into the mixture.

Dried Blood. — Only one sample has been inspected. This was listed as costing $105 per ton. It tested 12.07 per cent. nitrogen, making the pound cost of nitrogen from blood 43.5 cents.

Castor Pomace. — Only one sample was analyzed, the cash price being $50 per ton. The product contained 4.68 per cent. of nitrogen, making the pound cost of nitrogen in this substance 53.4 cents.

Cottonseed Meal. — Fifty-two samples of cottonseed meal have been analyzed. The average cost has been $56.56 per ton. They have shown an average of 6.02 per cent. nitrogen, making the pound cost of this element 47 cents. In making this calculation the value of the phosphoric acid and potash was not taken into consideration. It is safe to say that the value of the potash and phosphoric acid in average cottonseed meal is somewhere around $10 to $12 per ton, at present prices. An unusually large number of commercial shortages have been apparent during the year's inspection. They are as follows: —

F. W. Brode & Co. — Cottonseed Meal, Nos. 117, 207, 208, 209, 304, 715, 717, 718, 811 and 812: average nitrogen found, 6.52 per cent., guaranteed, 6.87 per cent.

One other carload of this brand did not show a commercial shortage. Deficiencies in all of these shipments have been made good by rebates.

Buckeye Cotton Oil Co. — Buckeye Good Cottonseed Meal, Nos. 605 and 781: average nitrogen found, 5.54 per cent., guaranteed, 5.76 per cent.

Seven other carloads were found well up to the minimum guarantee. Deficiencies on the two low samples were made good by proper rebates.

A. W. Higgins. — Cottonseed Meal, Nos. 433 and 435: average nitrogen found, 6.29 per cent., guaranteed, 6.88 per cent. The deficiencies in these two samples were made good by proper rebates.

Humphreys-Godwin Co. — Danish Cottonseed Meal, Nos. 40, 78, 176, 326, 432, 436, 522, 524, 527, 528 and 606: average nitrogen found, 5.64 per cent., guaranteed, 5.75 per cent.

Five other carloads of this brand were found well up to the guarantee. Deficiencies were made good in all cases.

Dixie Brand Cottonseed Meal, No. 325: nitrogen found, 6.47 per cent., guaranteed, 6.56 per cent. Deficiency made good by proper rebate.

Union Seed & Fertilizer Co. — Surety Brand Cottonseed Meal, No. 50: nitrogen found, 5.70 per cent., guaranteed, 5.76 per cent.

Ten other samples of this brand were found well up to the minimum guarantee. A proper rebate was made for the deficient sample.

Nitrate of Soda. — Twenty samples have been examined, necessitating 14 analyses. One brand showed a commercial shortage. The average nitrogen content has been 15.42 per cent. The average cost of nitrate of soda has been $105, making the pound cost of nitrogen 34 cents. The brand showing a commercial shortage was put out by the Bowker Fertilizer Company (No. 933): nitrogen found, 14.84 per cent., guaranteed, 15 per cent. Another sample of this brand was found to contain over 1 per cent. of nitrogen over the minimum guarantee.

Sulfate of Ammonia. — One sample has been analyzed and no deficiencies were found. It tested 21.36 per cent. of nitrogen. The average ton cost was $165, making the pound cost of nitrogen 38.6 cents.

Wood Ashes. — Fifty-three carloads of ashes were analyzed, representing four brands. The average of these analyses is as follows: —

	Per Cent.
Moisture,	16.38
Phosphoric acid,	1.41
Calcium oxide,	29.00
Total or acid soluble potash,	4.79
Water soluble potash,	3.68

The above average shows that about 76.8 per cent. of the total potash was soluble in water, as against 78 per cent. for the previous year. Wood ashes have been sold largely on the basis of $5 per unit for the total potash which they contained. This would make the actual K_2O cost at the rate of 25 cents per pound, no charge being made for phosphoric acid or lime. Many carloads, however, have been sold for a flat price of $20 per ton. Where they were sold on the ton basis, as a general rule, the ashes have not been as high grade, containing more water and insoluble earthy matter. The only safe way to obtain a good quality of wood ashes is to buy them on the unit basis, which means at a given price per pound of actual potash. Furthermore, this is the most equitable manner of purchasing not only wood ashes but almost all fertilizing materials. They are thus bought and sold almost without exception by the fertilizer brokers and manufacturers. The samples of wood ashes showing a commercial shortage are as follows: —

Ames Plow Co. — North's Hardwood Ashes, No. 893: soluble potassium oxide found, 2.91 per cent., guaranteed, 6.30 per cent.; phosphoric acid found, 1.42 per cent., guaranteed, 1.50 per cent.

Joseph Breck & Sons Corporation. — Breck's Wood Ashes, No. 307: soluble potassium oxide found, .41 per cent., guaranteed, 2 per cent.; phosphoric acid found, .41 per cent., guaranteed, .50 per cent.

R. & J. Farquhar & Co. — Farquhar's Pure Canada Unleached Hardwood Ashes, No. 320: soluble potassium oxide found, .68 per cent., guaranteed, 3 per cent.; phosphoric acid found, .37 per cent., guaranteed, 1 per cent.

John Joynt. — Seventeen carloads of ashes, represented by the following laboratory numbers, were found commercially deficient: Nos. 3, 4, 5, 17, 21, 26, 28, 30, 42, 56, 82, 155, 196, 281, 940, 941 and 942. The details regarding these shortages are given in the tables of analyses. It might be said in this connection that rebates figured by this office have been allowed by Mr. Joynt in all cases where shortages have occurred.

Acid Phosphate. — Forty-three samples of acid phosphate have been examined, necessitating 27 analyses. The average per cent. of available phosphoric acid found was 16.49. Acid phosphate has cost on the average $27.34 per ton, making the pound of available phosphoric acid from this source cost 8.29 cents. Two samples have shown a commercial shortage.

Lowell Fertilizer Co. — Acid Phosphate (14 per cent.), No. 260: available phosphoric acid found, 12.56 per cent., guaranteed, 14 per cent.

Sanderson Fertilizer & Chemical Co. — Acid Phosphate (16 per cent.), No. 480: available phosphoric acid found, 15.46 per cent., guaranteed, 16 per cent.

PRODUCTS SOLD LARGELY FOR THEIR POTASH CONTENT.

Several potash-containing substances have been offered to the retail trade during the year.

Potash-Lime Fertilizer. — This product, manufactured by the Alpha Portland Cement Company of Easton, Pa., contained 7.40 per cent. of potassium oxide soluble in dilute hydrochloric acid and 2.93 per cent. soluble in water. In addition there were found 1.20 per cent. of phosphoric acid and 24.34 per cent. of calcium oxide. The product was handled locally by Prentiss, Brooks & Co. of Holyoke and Westfield, and sold for about $20 per ton. A former analysis of this product made at this laboratory showed that out of a total of 6.67 per cent. of potassium oxide dissolved by strong hydrochloric acid 6.32 per cent. (nearly 95 per cent. of total actual potash) was dissolved by a fifth normal hydrochloric acid solution and 2.46 per cent. (about 37 per cent. of the total K_2O) was found soluble in water. The fact that such a large proportion of the total potash was dissolved by a weak solution of hydrochloric acid might indicate that a considerable amount of the potash that is not soluble in water will become readily available in the soil. Earlier studies also show that about 38 per cent. of the total lime present is in active form, in other words, dissolved by a 10 per cent. sugar solution. The effect of this active lime would probably compare favorably with hydrated or slaked lime of commerce. Potash-Lime Fertilizer will probably be found suitable for most crops if used in moderate quantities, particularly if the soil upon which it is used is inclined to be of an acid character. On the other hand, the free lime present might have a tendency on some soils to produce scabby potatoes, and on tobacco soils inclined to tobacco sickness some other form of potash will probably be found more suitable.

Manure Ashes. — This material comes from the Middle West stock yards where refuse material containing dry manurial matter is incinerated. The material has been sold locally by Mr. A. W. Higgins, Westfield, Mass., the price being about $5 per unit of potash. An average of four analyses, representing four carloads, shows the following composition: —

	Per Cent.
Total or acid soluble potash,	6.05
Water soluble potash,	3.78
Phosphoric acid,	2.87
Calcium oxide,	5.12

The nature of this material is in many respects similar to wood ashes. The soluble potash is present largely as carbonate. The potash not soluble in water is quite likely present in form of basic silicates formed by partial fusion of the potassium carbonate with silica compounds during the incinerating process. In all probability these basic silicates would be dissolved more or less readily in the soil, as they are readily soluble in a fifth normal solution of hydrochloric acid. The material would be a good potash source for most crops, and would, on account of a small percentage of lime present, probably be found more suitable for tobacco and potatoes than would ordinary hardwood ashes or cement potash.

Flue Dust. — This product, the origin of which is said to be from iron foundries, has been sold in considerable quantities locally by Mr. A. W. Higgins of Westfield, the price being $4.75 to $5 per unit of water soluble potash. An average of four analyses, representing four carloads of this material, gives the following results: —

	Per Cent.
Moisture,	8.11
Total or acid soluble potash,	7.20
Water soluble potash,	4.61
Phosphoric acid,	.78
Calcium oxide,	5.95

There seems to be no reason why this product should not prove a satisfactory source of potassium oxide for most crops, particularly at the price at which it has been offered. Laboratory tests show that about 88 per cent. of the total potassium oxide is soluble in a fifth normal hydrochloric acid solution, while about 64 per cent. is soluble in water.

NATURE'S PLANT FOOD.

The sale of this ground rock has apparently had a new lease of life during the past season, the greater part of it being distributed through department stores, the Woolworth stores, florists, hardware stores, etc., these stores being located chiefly in Boston and vicinity and sales being confined largely to small purchasers for home gardens.

Among the many extravagant claims made by the company for this product is the following, which is printed in large type on each package: "Unequalled for lawns. Guaranteed to stop the ravages of cut-worms and all other insect pests." Following a statement of the analysis, which contains nothing remarkable or unusual for a metamorphic rock of this character, this statement appears: "Only a small percentage of these elements are immediately soluble in distilled water, but we will guarantee the entire combination of minerals to be wholly soluble and available for plant life after being properly mixed with the soil as fast as the plants need them."

The product which has been sold during the season of 1918 was derived largely from a new quarry located at Byron, Me. In chemical composition it is very much like the product formerly produced at Rumford, Me., which was used in the field experiments conducted at this station in 1913 and 1914, detailed results of which were published in the Massachusetts fertilizer bulletins for those years. The results of these studies, as well as those of a carefully conducted pot experiment made in 1917, *which on account of lack of funds have not been published,* show conclusively that the ground rock has but little value as a source of plant food. The Byron product tests as follows: —

	Per Cent.
Total potassium oxide dissolved by strong hydrofluoric acid,	2.14
Potassium oxide soluble in hot water,	.06
Total acid soluble phosphoric acid,	.27
Acid soluble calcium oxide,	1.26

During the month of May, members of the Massachusetts Food Administration, in co-operation with officials from the Massachusetts Agricultural Experiment Station, held a public hearing at the State House in Boston on the subject of "Nature's Plant Food." The company, represented by counsel, was asked to show that their product possessed substantial properties as a fertilizer, as well as their justification for nearly doubling the price of the material. Evidence was given at the hearing in regard to the crop-producing value of the product, the data being furnished by carefully conducted field and pot experiments made at the Massachusetts Agricultural Experiment Station. The hearing lasted several days, being put over several times to accommodate the company in procuring witnesses, who claimed to have used the material with good results, to testify in its favor. No positive proof was presented that the product was actually responsible for any increased growth of crop, as it was used in every instance as a supplement to farm manure or fertilizer or both.

The Federal authorities at Washington were advised in regard to the hearing, and after due deliberation decided to reopen the case, which was done in August. The matter was gone into in very careful detail at this hearing, but no decision was rendered, nor has yet been rendered, as it was thought desirable to await the results of two vegetation tests with the material which are being conducted at the Massachusetts Agricultural Experiment Station and four different co-operative tests which are under study in different parts of the State by county agricultural agents.

MIXED COMPLETE FERTILIZERS.

A study of the tables of analyses of the complete fertilizers shows that out of a total of 108 brands analyzed, 47 (43.5 per cent. of the total number) fell below the minimum guarantee in one or more elements. The deficiencies were as follows: —

Brands deficient in one element,	35
Brands deficient in two elements,	9
Brands deficient in three elements,	3

Twenty-one brands (19.4 per cent. of the total number) showed a commercial shortage. The deficiencies in the several ingredients were as follows: —

Brands deficient in nitrogen,	21
Brands deficient in potash,	32
Brands deficient in available phosphoric acid,	13

The summary of commercial shortages in the year's inspection, as compared with 1917, is given in the following table: —

Commercial Shortages.	Number of Brands.	
	1917	1918
More than $6 per ton,	–	1
Between $4 and $5 per ton,	–	2
Between $3 and $4 per ton,	–	5
Between $2 and $3 per ton,	2	7
Between $1 and $2 per ton,	–	6
Under $1 and not less than 25 cents per ton,	2	–

The following brands have shown a commercial shortage of $1 or over per ton, values of over-runs being used in all cases to reduce shortages: —

American Agricultural Chemical Co. — Bradley's Potato Fertilizer, 1916, Nos. 228, 533, 617: nitrogen found, 2.01 per cent., guaranteed, 2.06 per cent.; available phosphoric acid found, 8.09 per cent., guaranteed, 8 per cent.; potassium oxide found, .81 per cent., guaranteed, 1 per cent.

Armour Fertilizer Works. — Armour's 2–8–3 Brand, Nos. 189, 235, 257, 360, 394: nitrogen found, 1.61 per cent., guaranteed, 1.65 per cent.; available phosphoric acid found, 8.22 per cent.; guaranteed, 8 per cent.; potassium oxide found, 2.71 per cent, guaranteed, 3 per cent.

Another sample of the same brand, Nos. 466, 511, 543, 602, 658: nitrogen found, 1.63 per cent., guaranteed, 1.65 per cent.; available phosphoric acid found, 8.26 per cent., guaranteed, 8 per cent.; potassium oxide found, 2.79 per cent., guaranteed, 3 per cent.

Joseph Breck & Sons Corporation. — Breck's Ram's Head Pulverized Sheep Manure, No. 593: nitrogen found, 1.67 per cent., guaranteed, 1.65 per cent.; phosphoric acid found, 1.20 per cent., guaranteed, 1.50 per cent.; potassium oxide found, 2.06 per cent., guaranteed, 2.50 per cent.

Essex Fertilizer Co. — Essex 2–8–4 Brand, No. 275: nitrogen found, 1.81 per cent., guaranteed, 1.64 per cent.; available phosphoric acid found, 8.50 per cent., guaranteed, 8 per cent.; potassium oxide found, 3.55 per cent., guaranteed, 4 per cent.

Essex 4–8–2 Brand, No. 276: nitrogen found, 3.29 per cent., guaranteed, 3.28 per cent.; available phosphoric acid found, 8.86 per cent., guaranteed, 8 per cent.; potassium oxide found, 1.59 per cent., guaranteed, 2 per cent.

Another sample of this brand, No. 667: nitrogen found, 3.09 per cent., guaranteed, 3.38 per cent.; available phosphoric acid found, 8.39 per cent., guaranteed, 8 per cent.; potassium oxide found, 1.92 per cent., guaranteed, 2 per cent.

Essex 4–8–4 Brand, No. 277: nitrogen found, 3.08 per cent., guaranteed, 3.28 per cent.; available phosphoric acid found, 8.60 per cent., guaranteed, 8 per cent.; potassium oxide found, 3.71 per cent., guaranteed, 4 per cent.

In correspondence with the company in relation to these shortages, it was claimed that the same goods shipped into Maine about the same time that they were shipped into Massachusetts were found well up to the minimum guarantee. No explanation could be made by the company for the shortages discovered.

R. & J. Farquhar & Co. — Farquhar's Sheep Manure, No. 879: nitrogen found, .68 per cent., guaranteed, 1 per cent.; phosphoric acid found, .74 per cent., guaranteed, .78 per cent.; potassium oxide found, 1.46 per cent., guaranteed, 1.50 per cent. The very wet condition of this material was in all probability responsible for the low analysis shown. The product contained 67.45 per cent of water.

Fertile Chemical Co. — Nitro-Fertile, No. 397: nitrogen found, 2.30 per cent., guaranteed, 2 per cent.; available phosphoric acid found, 2.30 per cent., guaranteed, 3 per cent.; potassium oxide found, 2.08 per cent., guaranteed, 3 per cent.

A complaint was made to the company about the low tests shown on this material and a request was made that other samples of the material be taken, as it was believed by the company that the sample analyzed was not representative of the product. Two other samples were procured in two different places in Worcester, Mass. No. 931 showed no commercial shortage, but had a nitrogen deficiency amounting to .54 per cent. This was offset by an over-run in potassium oxide of nearly 1.50 per cent. and a small over-run in available phosphoric acid. Another sample, No. 932, showed a serious commercial shortage. The analysis was as follows: nitrogen found, 1.51 per cent., guaranteed, 2 per cent.; available phosphoric acid found, 1.67 per cent., guaranteed, 3 per cent.; potassium oxide found, 2.19 per cent., guaranteed, 3 per cent. The company has the following to say in regard to the poor showing of their product: " We buy only the highest grade materials that can be purchased, all materials are analyzed upon receipt at the factory and we have the services of a competent chemist. The only explanation which can be offered is that prior to January 1, 1918, the manufacture of the product was in charge of a man who left our employ January 1, and has since organized a competitive company. We feel sure that no deficiencies will be found on goods manufactured since January 1, 1918."

Charles W. Hastings. — Ferti-Flora, No. 496: nitrogen found, 3.17 per cent., guaranteed, 3.25 per cent.; available phosphoric acid found, 3.01 per cent., guaranteed, 3.67 per cent.; potassium oxide found, .12 per cent., guaranteed, 3.30 per cent. The explanation of Mr. Hastings with reference to the lack of potash, as well as other deficiencies in his product, is that the chemicals which go into his liquid fertilizer were purchased from the Eastern Chemical Company of Jamaica Plains and were used in exactly the same proportions as in previous years. Inquiry regarding the Eastern Chemical Company shows that they have gone out of business, the manager of the company going into military service. Further efforts to explain the shortages were, therefore, impossible, according to Mr. Hastings. It was his opinion, however, that the chemicals did not contain the potassium oxide expected. Owing to the increased difficulty in securing pure chemicals, the manufacture of Ferti-Flora solution will, according to Mr. Hastings, be discontinued for the duration of the war.

International Agricultural Corporation. — Buffalo Economy, No. 844: nitrogen found, 1.29 per cent., guaranteed, 1.65 per cent.; available phosphoric acid found, 10.32 per cent., guaranteed, 10 per cent.; potassium oxide found, .45 per cent., guaranteed, 1 per cent.

Buffalo General Favorite, No. 842: nitrogen found, .80 per cent., guaranteed, .80 per cent.; available phosphoric acid found, 7.53 per cent., guaranteed, 7 per cent.; potassium oxide found, .78 per cent., guaranteed, 1 per cent.

The manufacturer's comment on these deficiencies is shown by the following: " We know of no reason for the deficiencies shown; and four analyses of each brand, made by the company's chemist during the shipping season, showed the guarantees to be well maintained in all instances." Copies of these analyses were submitted to the experiment station by the company's manager.

Lowell Fertilizer Co. — Lowell 2–8–4 Brand, No. 614: nitrogen found, 1.67 per cent., guaranteed, 1.64 per cent.; available phosphoric acid found, 8.09 per cent., guaranteed, 8 per cent.; potassium oxide found, 3.59 per cent., guaranteed, 4 per cent.

Another sample of the same brand did not show a commercial shortage.

Lowell 2–8–2 Brand, No. 616: nitrogen found, 1.50 per cent., guaranteed, 1.64 per cent.; available phosphoric acid found, 8.11 per cent., guaranteed, 8 per cent.; potassium oxide found, 1.88 per cent., guaranteed, 2 per cent.

Lowell 4–8–4 Brand, Nos. 236, 255: nitrogen found, 3.24 per cent., guaranteed, 3.28 per cent.; available phosphoric acid found, 8.50 per cent., guaranteed, 8 per cent.; potassium oxide found, 3.65 per cent., guaranteed, 4 per cent.

Mapes Formula & Peruvian Guano Co. — Mapes Corn Manure, 1916, Nos. 756, 761: nitrogen found, 2.55 per cent., guaranteed, 2.47 per cent.; available phosphoric acid found, 7.73 per cent., guaranteed, 8 per cent.; potassium oxide found, .54 per cent., guaranteed, 1 per cent.

Another sample of the same brand, although somewhat deficient commercially, showed a much better condition. Nos. 311, 350, 635, 682: nitrogen found, 2.61 per cent., guaranteed, 2.47 per cent.; available phosphoric acid found, 8.96 per cent., guaranteed, 8 per cent.; potassium oxide found, .57 per cent., guaranteed, 1 per cent.

National Fertilizer Co. — National Pine Tree State Potato Manure, No. 57: nitrogen found, 3.22 per cent., guaranteed, 3.29 per cent.; available phosphoric acid found, 7.84 per cent., guaranteed, 8 per cent.; potassium oxide found, 3.64 per cent., guaranteed, 4 per cent.

Another sample of the same brand was found well up in all three ingredients.

National Extra High Grade Potato Fertilizer, No. 143: nitrogen found, 4.12 per cent., guaranteed, 4.11 per cent.; available phosphoric acid found, 10.69 per cent., guaranteed, 10 per cent.; potassium oxide found, 3.45 per cent., guaranteed, 4 per cent.

Ross Bros. Co.— High Grade Potato and Vegetable Fertilizer, No. 671: nitrogen found, 1.74 per cent., guaranteed, 2.88 per cent.; available phosphoric acid found, 9.19 per cent., guaranteed, 8 per cent.; potassium oxide found, 3.35 per cent., guaranteed, 3 per cent.

Another sample of this brand, No. 928, collected at a later date, gave the following analysis: nitrogen found, 1.81 per cent., guaranteed, 2.88 per cent.; available phosphoric acid found, 9.59 per cent., guaranteed, 8 per cent.; potassium oxide found, 3.27 per cent., guaranteed, 3 per cent.

Corn, Grass and Grain Fertilizer, No. 887: nitrogen found, 2.53 per cent., guaranteed, 2.88 per cent.; available phosphoric acid found, 8.17 per cent., guaranteed, 8 per cent.; potassium oxide found, 1 per cent., guaranteed, 1 per cent.

Unsuccessful attempts were made to procure other samples of this brand for inspection purposes.

F. S. Royster Guano Co. — Royster's Drillwell Phosphate, No. 904: nitrogen found, 2.07 per cent., guaranteed, 2.47 per cent.; available phosphoric acid found, 7.91 per cent., guaranteed, 8 per cent.; potassium oxide found, 1.07 per cent., guaranteed, 1 per cent.

Whitman & Pratt Rendering Co. — Whitman & Pratt's 4-8-4 Brand: nitrogen found, 3.50 per cent., guaranteed, 3.28 per cent.; available phosphoric acid found, 8.88 per cent., guaranteed, 8 per cent.; potassium oxide found, 3.20 per cent., guaranteed, 4 per cent.

AMMONIATED SUPERPHOSPHATES.

Summaries show that out of 151 brands of ammoniated superphosphates analyzed 36 (23.8 per cent. of the total number) fell below the minimum guarantee in one or more elements. Thirty-four brands were found deficient in one element and two in both elements of plant food. Thirty-one brands were found deficient in nitrogen and 7 in phosphoric acid. One brand showed a commercial shortage of over $3 per ton, 3 between $2 and $3, 5 between $1 and $2, and 5 under $1, but not less than 50 cents. Following are the brands which have shown serious commercial deficiencies: —

W. H. Abbott. — Abbott's Eagle Brand, No. 906: nitrogen found, 3.44 per cent., guaranteed, 4 per cent.; available phosphoric acid found, 9.49 per cent., guaranteed, 8 per cent.

Upon receipt of advanced report of this analysis, the manufacturer advised that the sample had evidently been taken from goods which had been mixed for his own personal use and to which some wood ashes had been added. A test for potash did reveal nearly one half of 1 per cent. of potassium oxide. Later in the season a new batch of this brand was mixed to fill a belated order. A certified representative sample, which also ran low in nitrogen, was sent for analysis by the manufacturer, but gave a better showing than did the other sample. No. 939: nitrogen found, 3.56 per cent., guaranteed, 4 per cent.; available phosphoric acid found, 9.35 per cent., guaranteed, 8 per cent.

Essex Fertilizer Co. — Essex Market Garden and Potato Manure (3½–10). Two samples of this brand showed a commercial shortage.

No. 246: nitrogen found, 2.41 per cent., guaranteed, 2.87 per cent.; available phosphoric acid found, 8.85 per cent., guaranteed, 10 per cent.

No. 809: nitrogen found, 2.64 per cent., guaranteed, 2.87 per cent.; available phosphoric acid found, 9.11 per cent., guaranteed, 10 per cent.

Two other samples of this brand did not show a commercial shortage.

Essex Potato Phosphate (4–10), No. 831: nitrogen found, 2.10 per cent., guaranteed, 3.29 per cent.; available phosphoric acid found, 10.46 per cent., guaranteed, 10 per cent.

Two other samples of this brand did not show a commercial shortage.

Essex High Grade (5–8), No. 922: nitrogen found, 3.43 per cent., guaranteed, 4.11 per cent.; available phosphoric acid found, 8.47 per cent., guaranteed, 8 per cent.

International Agricultural Corporation. — Buffalo Top Dresser, Nos. 96, 108, 147: nitrogen found, 5.21 per cent., guaranteed, 5.80 per cent.; available phosphoric acid found, 6.81 per cent., guaranteed, 6 per cent.

Lowell Fertilizer Co. — Lowell Empress Brand (1½–10), Nos. 704, 726, 735, 797: nitrogen found, 1 per cent., guaranteed, 1.23 per cent.; available phosphoric acid found, 9.78 per cent., guaranteed, 10 per cent.

The analysis of a composite of equal weights taken from three other samples of this brand did not show a commercial shortage.

Lowell Bone Fertilizer for Corn, Grain and Grass (2½–10), Nos. 355, 457, 474: nitrogen found, 1.72 per cent., guaranteed, 2 per cent.; available phosphoric acid found, 9.82 per cent., guaranteed, 10 per cent.

Lowell Animal Brand (3½–10), Nos. 473, 512, 519: nitrogen found, 2.60 per cent., guaranteed, 2.87 per cent.; available phosphoric acid found, 9.83 per cent., guaranteed, 10 per cent.

An analysis of a composite of equal weights taken from four other samples of this brand showed no commercial shortage.

New England Fertilizer Co. — New England Corn Phosphate (2½–10), No. 867: nitrogen found, 1.95 per cent., guaranteed, 2.05 per cent.; available phosphoric acid found, 10.36 per cent., guaranteed, 10 per cent.

An analysis of a composite of two other samples of this brand showed no deficiencies.

New England High Grade Potato Fertilizer, Nos. 503, 521, 630: nitrogen found, 3.10 per cent., guaranteed, 3.29 per cent.; available phosphoric acid, 10.44 per cent., guaranteed, 10 per cent.

New England Special Tobacco Manure, No. 905: nitrogen found, 3.86

per cent., guaranteed, 4.12 per cent.; available phosphoric acid found, 6.45 per cent., guaranteed, 6 per cent.

New England Potato Fertilizer (3-10), No. 506: nitrogen found, 2.40 per cent., guaranteed, 2.46 per cent.; available phosphoric acid found, 10.06 per cent., guaranteed, 10 per cent.

Parmenter & Polsey Fertilizer Co. — P. & P. Potato Phosphate (4-10), No. 901: nitrogen found, 2.96 per cent., guaranteed, 3.29 per cent.; available phosphoric acid found, 11.23 per cent., guaranteed, 10 per cent.

Rogers & Hubbard Co. — Rogers & Hubbard's "Bone Base" Soluble Tobacco Manure, 1917, No. 618: nitrogen found, 4.69 per cent., guaranteed, 5 per cent.; available phosphoric acid found, 8.62 per cent., guaranteed, 10 per cent. This sample was no doubt taken from goods carried over from 1917. Two other samples of this brand, made for the 1918 trade, did not show a commercial shortage.

F. S. Royster Guano Co. — Royster's Perfecto Tobacco Formula, Nos. 163, 817, 857: nitrogen found, 3.90 per cent., guaranteed, 4.11 per cent.; available phosphoric acid found, 4.33 per cent., guaranteed, 4 per cent.

Sanderson Fertilizer & Chemical Co. — Double Strength Ammonia Mixture, No. 483: nitrogen found, 6.19 per cent., guaranteed, 6.58 per cent.; available phosphoric acid found, 8.14 per cent., guaranteed, 8 per cent.

QUALITY OF PLANT FOOD IN MIXED FERTILIZERS.

Nitrogen in Complete Fertilizers. — A study of the nitrogen used in the mixed complete fertilizers for 1918 shows that the average total nitrogen found was 2.85 per cent., nitrates and ammoniates, 1.87 per cent., and organic nitrogen, .98 per cent. According to these figures, 65.5 per cent. of the total nitrogen was found present in the form of nitrates and ammoniates, and 34.5 per cent. in organic form. The quality of the organic nitrogen used in these mixtures is indicated by the following averages: water soluble organic, .14 per cent.; water insoluble organic, .84 per cent., of which .46 per cent. was found active and .38 per cent. inactive by the laboratory methods. The average total nitrogen in the complete fertilizers had a percentage activity of 86.7 per cent., the total organic nitrogen of 61.2 per cent., and the water insoluble organic nitrogen of 54.8 per cent.

Nitrogen in Ammoniated Superphosphates. — The following data show the quality of nitrogen used in these mixtures: average total nitrogen found, 3.18 per cent.; nitrogen in form of nitrates and ammoniates, 1.73 per cent.; organic nitrogen, 1.45 per cent. From these figures it will be seen that about 54.4 per cent. of the total nitrogen was present in mineral forms and 45.6 per cent. in organic forms. It was found that .38 per cent. of the organic nitrogen used was water soluble and 1.07 per cent. was water insoluble. Of this latter, .60 per cent. was found active and .47 per cent. inactive by laboratory methods. The percentage activity of the total nitrogen was about 85 per cent., of the total organic nitrogen 67.6 per cent., and of the water insoluble organic nitrogen 56 per cent.

Brands of Mixed Fertilizer showing Inferior Forms of Nitrogen. — Ten out of a total of 108 brands of complete fertilizers and 3 out of a total of 151 brands of ammoniated superphosphates, besides 1 brand of partially dried peat or humus and 7 brands of pulverized sheep manure, were found to contain organic nitrogen of questionable quality, and are indicated in the tables of analyses by the word " inferior " in the column headed " Quality of water insoluble organic nitrogen."

The following table gives a detailed report of the studies on brands of complete fertilizers and ammoniated superphosphates which have shown the presence of inferior forms of organic nitrogen. Although the list is somewhat smaller than last season, it may not indicate a much better showing, for the reason that fewer brands have been offered to the trade. If it were deemed advisable by any manufacturer to use a couple of hundred pounds of peat or other low-grade organic substance in order to insure a proper mechanical condition, there would be no objection to such a practice, provided the nitrogen which it carried was not included in the guarantee and a proper notation of its use was included in the printed label on the package. The following brands were reported in 1917 as containing organic nitrogen of inferior quality, in fact some of these brands have for years borne this criticism: Armour's 1–8–2, Carter's Worm Eradicating Fertilizer, Mapes Potato Manure, Mapes Corn Manure, and Essex Grain, Grass and Potato Fertilizer.

The fact that certain brands of mixed goods appear in the table year after year, showing evidences of the presence of inferior forms of organic nitrogen, would indicate that at least some fertilizer manufacturers were not paying sufficient attention to the manufacture of their base goods mixtures. Most of the fertilizer products containing nitrogen of low availability may be so treated as to make them sufficiently available to pass inspection by the well-known laboratory methods. Many of the largest fertilizer companies oblige their chemists to follow up this nitrogen availability work very closely, and are constantly improving their processes of treatment of the lower grade materials, with the result that a brand is very seldom discovered which shows the presence of a sufficient percentage of inferior organic nitrogen to cause serious criticism. It is to be hoped that a larger number of manufacturers will recognize the importance of this matter, for it is very important from the consumer's standpoint, especially when he is asked to pay from $9 to $12 per unit for nitrogen.

It might be said, with reference to the Mapes' brands which have shown inferior forms of organic nitrogen, that the company claims to have used only guano, cottonseed meal, blood, tankage and bone to furnish the organic nitrogen.

The E. D. Chittenden Company claims the presence of some tobacco stems in the brand of its goods, which shows a low activity of the water insoluble organic nitrogen. It is a well-known fact that the water insoluble portion of Peruvian guano and tobacco stems shows a low nitrogen activity. In case of the Peruvian guano this is no doubt due to the presence of more or less feathers and indigestible organic matter; and in case of tobacco stems, the presence of an exceptionally large quantity of woody fiber, accompanied by a correspondingly low amount of nitrogen, would account for its low activity. Vegetation tests made at this institution with the water insoluble portion of the nitrogen from these two materials show a low activity corresponding to laboratory methods.

Brands of Fertilizer showing Inferior Forms of Organic Nitrogen (Per Cent.).

NAME OF BRAND.	TOTAL NITROGEN.		Nitrogen as Nitrates and Ammoniates.	Water Soluble Organic Nitrogen.	Water Insoluble Organic Nitrogen.	ACTIVITY OF WATER INSOLUBLE NITROGEN. METHOD.	
	Found.	Guaranteed.				Alkaline Permanganate.	Neutral Permanganate.
COMPLETE FERTILIZERS.							
Armour's Wheat, Corn and Oats Special,	.95	.82	.28	.13	.54	45	74
Armour's 1-8-2,	1.09	.82	.22	.21	.66	42	73
Armour's 2-8-3,	1.61	1.65	.47	.20	.94	45	72
Carter's Worm Eradicating Fertilizer,	2.02	1.81	.09	.05	1.88	33	68
Chittenden's Vegetable and Onion Grower, 1 per cent. Potash,	2.41	2.47	1.72	.13	.56	42	79
Buffalo Tip Top,	1.06	.80	.61	.03	.42	37	80
Mapes Potato Manure,	3.86	3.71	3.05	.22	.59	34	75
Mapes Potato Manure,	3.86	3.71	3.05	.20	.61	39	42
Mapes Tobacco Starter Improved,	4.12	4.12	2.68	.28	1.16	39	56
Mapes General Special,	5.89	5.76	4.65	.38	.86	45	84
Mapes Corn Manure,	2.61	2.47	1.95	.10	.56	40	78
Mapes Corn Manure,	2.55	2.47	2.12	.03	.40	32	38
AMMONIATED SUPERPHOSPHATES.							
Essex Grain, Grass and Potato Fertilizer,	.82	.82	.19	.26	.37	44	64
Lowell Bone Fertilizer for Corn, Grain and Grass,	1.72	2.00	.88	.38	.46	39	74
New England Corn Phosphate,	2.19	2.06	1.20	.50	.49	41	76

NOTE. — An availability below 50 by the alkaline and 85 by the neutral permanganate method classes the water insoluble nitrogen as inferior.

Phosphoric Acid in Mixed Fertilizers. — Of the total phosphoric acid found in the complete mixed fertilizers, 83.76 per cent. was in available form and 57.9 per cent. of the available phosphoric acid was in water soluble form. In the ammoniated superphosphates 84 per cent. of the total phosphoric acid was in available form and 55 per cent. of the available phosphoric acid was in water soluble form. These figures show a satisfactory availability.

Potash in Complete Fertilizers. — The average complete fertilizer contained 1.74 per cent. of water soluble potash. The larger proportion of the brands (namely, 72) had but 1 per cent. of potash, 12 had 2 per cent., 8 had 3 per cent., and 12 had a minimum of 4 per cent. guaranteed. Out of a total of 108 brands analyzed, 32, or 30 per cent. of the total number, failed to meet the minimum potash guarantee. The manufacturers are no doubt having some difficulty in finding potash salts free from chlorine. Most brands contain their potash both as muriate and as sulfate, this being true even for brands designated for tobacco and potatoes. The small amount of potassium oxide present, however, eliminates any serious damage resulting to quality, due to chlorine being present.

LIME COMPOUNDS.

Forty-three samples of lime products have been examined. Thirty-five analyses have been made, representing 25 distinct brands. The average percentage of calcium and magnesium oxides found in the more active forms of lime, such as the hydrated or slaked limes, has been 63.46 per cent. and 3.98 per cent., respectively. Lime ashes have shown on the average 44.65 per cent. of calcium oxide and 1.64 per cent. of magnesium oxide. It will be seen by the footnotes that 3 samples of lime ashes have shown unusually large percentages of potash. Two of these brands were submitted by the manufacturer. Although perhaps one would not be justified in assuming that the samples had been selected on account of the large proportion of wood ashes which were present, yet the fact should not be lost sight of that the potash content is very much in excess of the average for this product, which would probably not amount to one-half of 1 per cent.

Fine ground limestone has tested on the average 44.75 per cent. of calcium oxide and 4.44 per cent. of magnesium oxide. The guarantees of calcium and magnesium oxides on all the lime products have, as a general rule, been pretty well maintained, the few exceptions being easily noted in the tables of analyses. The advance in the cost of lime products has not kept pace with that for commercial fertilizers, and as a rule the slight increase has been due to increased cost of labor and operating expenses. The analytical data have been presented in about the same form as in previous years, and the tables will be found self-explanatory.

Lime-Fertile. — According to the literature of the manufacturers who put out this material, it is composed of 80 per cent. carbonate of lime (fine ground limestone) and 20 per cent. of fine ground phosphate rock, which are claimed to act as carriers for certain soil bacteria. Our analysis would indicate that the product was a mixture of carbonate of lime and ground rock phosphate, which, to say the least, would not produce an ideal vehicle for soil bacteria. Limestone analyzing 50 odd per cent. of calcium oxide can be purchased delivered at points in Massachusetts at $5 to $6 per ton, and Tennessee Ground Phosphate Rock, analyzing about 40 per cent. phosphoric acid, is quoted at $7 to $8 per ton, f. o. b. Mount Pleasant. Allowing $10 per ton for freight and war tax, and 20 per cent. additional to change the price to a retail basis, would make the product cost at retail about $21 per ton. Three hundred pounds of this ground phosphate rock would furnish somewhat more phosphoric acid than is found in a ton of the Lime-Fertile, and would cost about $3.25. To make up a ton would require 1,700 pounds of fine ground limestone, which would cost $5.10; allowing $2 per ton for mixing, would make the cost of a ton of the mixed product $9.85. The bacteria for any legume can be purchased from the Department of Microbiology, Massachusetts Agricultural College, in quantities sufficient for one acre, for 25 cents. It will be seen, therefore, that Lime-Fertile can be duplicated for about $10 per ton, including the bacteria. The retail price charged for Lime-Fertile was $50 to $55 per ton. It will be noted that the material does not furnish potash, and the calcium oxide present is depended upon to liberate a sufficient quantity of actual potash from the soil for the needs of the crops. The use of carbonate of lime in the form of fine ground limestone, or for that matter hydrated or slaked lime, will do just as much good in this respect as Lime-Fertile. It might be said in this connection that it is somewhat doubtful if lime is actually instrumental in liberating potash from insoluble compounds in the soil. On the other hand, lime does seem to possess the property of liberating insoluble phosphoric acid compounds in the soil. The Lime-Fertile does not furnish any nitrogen directly, but the lime which it contains is depended upon to sweeten the soil, thereby making a better environment for soil bacteria which cause a more rapid decomposition of the existing organic matter, thus liberating its nitrogen. Lime also favors the development of certain bacteria which add nitrogen directly to the soil and of species of nitrogen-fixing bacteria operating on many leguminous plants. The lime and phosphate mixture, costing about $10 per ton, would in all probability accomplish these ends quite as well as the Lime-Fertile.

EXPLANATION OF THE TABLES OF ANALYSES.

In all of the analytical tables, the general form adopted in previous years has been adhered to. In case of the mixed fertilizers, one section is designated as fertilizers furnishing nitrogen, phosphoric acid and potash, the other section those which furnish nitrogen and phosphoric acid. Both of these have been arranged alphabetically, according to the manufacturer's name. The nitrogen is given in its various forms as follows: as nitrates and ammoniates, water soluble organic, water insoluble organic and total. It should be understood that nitrogen in form of nitrates and ammoniates, and the water soluble organic nitrogen, is not only easily dissolved but highly available. The quality of the water insoluble organic nitrogen is indicated in the tables by the words "passed" and "inferior." The word "passed" indicates that the brand carries its water insoluble nitrogen in a satisfactory form, while the word "inferior" indicates the presence of inferior forms of organic ammoniates, as measured by the laboratory method. The column headed "Guarantee substantially met" will indicate at a glance whether the particular brand shows a commercial shortage. The brands showing a serious commercial shortage have been designated by the word "no." On the other hand, where the guarantee is substantially met, the word "yes" has been used. Such an unusually large number of brands contained potash, both in form of muriate and sulfate, that it was thought best to give approximate proportions of each rather than give in each case the percentage of chlorine present. This practice insures the minimum of footnotes.

Fertilizers furnishing Nitrogen, Phosphoric Acid and Potash.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
Alphano Humus Co., Whitehall Bldg., New York City.				
Alphano Humus,	Manufacturer's sample,	Yes	909	17.15
American Agric. Chem. Co., 92 State St., Boston, Mass.				
Bradley's Special Eclipse Phosphate,	Millis,	Yes	399	6.86
Bradley's Special Eclipse Phosphate,	Lowell,	Yes	455	
Bradley's Special Eclipse Phosphate,	Haverhill,	Yes	595	
Bradley's Special Eclipse Phosphate,	Newton Lower Falls,	Yes	612	
Bradley's Special Eclipse Phosphate,	Belchertown,	Yes	659	
Bradley's Special Eclipse Phosphate,	Marlborough,	Yes	770	7.81
Bradley's Corn Phosphate,	Ware,	Yes	818	8.43
Bradley's Potato Fertilizer, 1916,	Fall River,	No	228	7.31
Bradley's Potato Fertilizer, 1916,	Framingham,	No	533	
Bradley's Potato Fertilizer, 1916,	Newton Lower Falls,	No	617	
Bradley's, 1916, XL Superphosphate of Lime,	Beverly,	Yes	411	8.95
Bradley's, 1916, XL Superphosphate of Lime,	Sunderland,	Yes	721	
Bradley's Potato Manure, 1916,	Leominster,	Yes	184	6.80
Bradley's Potato Manure, 1916,	Fall River,	Yes	240	
Bradley's Potato Manure, 1916,	Boston,	Yes	315	
Bradley's Potato Manure, 1916,	Beverly,	Yes	409	7.84
Bradley's Complete Manure for Potatoes and Vegetables, 1916,	Bradstreet,	Yes	60	8.05
Bradley's Complete Manure for Potatoes and Vegetables, 1916,	Boston,	Yes	319	
Bradley's Complete Manure for Potatoes and Vegetables, 1916,	Millis,	Yes	400	
Bradley's Complete Manure for Potatoes and Vegetables, 1916,	Sunderland,	Yes	724	7.67
Bradley's Northland Potato Grower,	Boston,	Yes	310	7.88
Bradley's Northland Potato Grower,	Rockland,	Yes	632	
Bradley's Extra Potato and Root Special,	Boston,	Yes	330	8.38
Bradley's Extra Potato and Root Special,	Newton Lower Falls,	Yes	611	
Breck's Extra Market Garden Manure,	Boston,	Yes	306	10.14
Church's Fish and Potash D, 1916,	North Westport,	Yes	213	9.31
Quinnipiac Market Garden Manure,	Pittsfield,	Yes	837	9.19
General Crop Grower, 1916,	Whitman,	Yes	385	8.10
High Grade Fertilizer, 1916,	North Amherst,	Yes	149	9.38
High Grade Fertilizer, 1916,	Southborough,	Yes	762	
Pulverized Sheep Manure,	Lawrence,	Yes	599	9.81
Triumph Crop Special,	Pepperell,	Yes	787	9.11
Wheeler's Corn Fertilizer, 1916,	Attleboro,	Yes	869	9.35
Wheeler's Potato Manure, 1916,	Attleboro,	Yes	870	9.23
Great Eastern General, 1916,	Chelmsford,	Yes	449	6.72
Great Eastern Potato Manure,	Chelmsford,	Yes	450	8.69
Great Eastern Garden Special,	Arlington,	Yes	885	9.21
Packer's Union Universal Fertilizer, 1916,	Whitman,	Yes	392	7.00
Packer's Union Animal Corn Fertilizer,	Stow,	Yes	897	9.46
Packer's Union Potato Manure,	Millers Falls,	Yes	912	10.00
Armour Fertilizer Works, Baltimore, Md.				
Armour's Wheat, Corn and Oats Special,	Worcester,	Yes	190	4.85
Armour's Wheat, Corn and Oats Special,	Middleborough,	Yes	343	
Armour's Wheat, Corn and Oats Special,	Whitman,	Yes	387	
Armour's Wheat, Corn and Oats Special,	Framingham,	Yes	537	4.70
Armour's Wheat, Corn and Oats Special,	Salem,	Yes	554	
Armour's Wheat, Corn and Oats Special,	Haverhill,	Yes	598	
Armour's Wheat, Corn and Oats Special,	Attleboro,	Yes	600	
Armour's 1-8-2 Fertilizer,	Taunton,	Yes	258	6.35
Armour's 1-8-2 Fertilizer,	Middleborough,	Yes	342	
Armour's 1-8-2 Fertilizer,	Whitman,	Yes	393	
Armour's 1-8-2 Fertilizer,	Billerica,	Yes	470	5.68
Armour's 1-8-2 Fertilizer,	Framingham,	Yes	542	
Armour's 1-8-2 Fertilizer,	Salem,	Yes	553	
Armour's 1-8-2 Fertilizer,	Attleboro,	Yes	601	

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[1] About one-third of potash as muriate, remainder as sulfate.

[2] About two-thirds of potash as muriate, remainder as sulfate.

Fertilizers furnishing Nitrogen, Phosphoric Acid and Potash.

NITROGEN IN 100 POUNDS.						PHOSPHORIC ACID IN 100 POUNDS.							POTASH (K_2O) IN 100 POUNDS.	
				TOTAL.					TOTAL.		AVAILABLE.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
–	–	–	Inferior	2.06	1.25	–	.20	1.10	1.30	.50	.20	.50	.22	.50
.70	.04	.25	Passed	.99	.82	4.85	3.27	.61	8.73	9.00	8.12	8.00	1.09[1]	1.00
.65	.04	.29	Passed	.98	.82	4.44	3.50	.79	8.73	9.00	7.94	8.00	1.05[2]	1.00
1.22	.18	.37	Passed	1.77	1.65	7.50	2.60	1.02	11.12	11.00	10.10	10.00	1.20[3]	1.00
1.36	.28	.37	Passed	2.01	2.06	4.72	3.37	.97	9.06	9.00	8.09	8.00	.81[3]	1.00
2.10	.31	.44	Passed	2.85	2.47	5.68	3.81	1.10	10.59	10.00	9.49	9.00	1.01	1.00
1.95	.33	.47	Passed	2.75	2.47	6.06	3.92	.92	10.90	10.00	9.98	9.00	1.14[4]	1.00
1.89	.12	.54	Passed	2.55	2.47	4.95	4.16	1.45	10.56	10.00	9.11	9.00	1.16[3]	1.00
2.68	.37	.53	Passed	3.58	3.29	5.33	3.88	1.71	10.92	10.00	9.21	9.00	.94[2]	1.00
2.65	.36	.54	Passed	3.55	3.29	5.74	3.60	1.66	11.00	10.00	9.34	9.00	1.38[2]	1.00
2.84	.28	.63	Passed	3.75	3.29	2.84	5.48	1.61	9.93	9.00	8.32	8.00	3.61[3]	4.00
2.37	.27	.68	Passed	3.32	3.29	4.91	5.70	1.33	11.94	11.00	10.61	10.00	2.84[3]	3.00
2.89	.15	.77	Passed	3.81	3.29	4.69	5.10	1.15	10.94	10.00	9.79	9.00	1.78[3]	1.00
1.18	.21	.41	Passed	1.80	1.65	5.10	4.42	.89	10.41	10.00	9.52	9.00	1.14[1]	1.00
2.54	.40	.53	Passed	3.47	3.29	6.29	3.51	.66	10.46	10.00	9.80	9.00	1.30	1.00
1.51	.25	.37	Passed	2.13	1.65	6.06	4.09	1.10	11.25	10.00	10.15	9.00	1.09[3]	1.00
2.20	.35	.57	Passed	3.12	2.47	5.87	3.19	.89	9.95	10.00	9.06	9.00	1.07[3]	1.00
–	–	–	Inferior	2.32	2.06	–	–	–	1.68	1.25	–	–	1.69	1.00
2.27	.29	.49	Passed	3.05	2.47	3.23	5.24	1.53	10.00	9.00	8.47	8.00	3.18[1]	3.00
1.50	.27	.49	Passed	2.26	1.65	6.10	4.23	1.12	11.45	11.00	10.33	10.00	1.26[3]	1.00
1.25	.36	.42	Passed	2.03	2.06	5.68	4.35	.97	11.00	11.00	10.03	10.00	1.45[3]	1.00
.32	.60	.20	Passed	1.12	.82	4.15	3.66	.97	8.78	9.00	7.81	8.00	1.10[2]	1.00
1.68	.13	.39	Passed	2.20	2.06	6.44	4.10	1.30	11.84	11.00	10.54	10.00	1.08[2]	1.00
2.60	.04	.67	Passed	3.31	3.29	4.97	4.09	1.40	10.46	10.00	9.06	9.00	1.24[3]	1.00
.70	.16	.22	Passed	1.08	.82	4.97	3.40	.71	9.08	9.00	8.37	8.00	.95[4]	1.00
1.15	.10	.44	Passed	1.69	1.65	5.29	4.38	1.48	11.15	11.00	9.67	10.00	1.26[3]	1.00
1.84	.06	.50	Passed	2.40	2.06	5.93	4.27	1.15	11.35	11.00	10.20	10.00	1.53[3]	1.00
.28	.13	.54	Inferior	.95	.82	5.42	2.51	.74	8.67	7.50	7.93	7.00	1.19[3]	1.00
.22	.11	.52	Passed	.85	.82	5.17	2.48	1.02	8.67	7.50	7.65	7.00	1.18[3]	1.00
.28	.17	.66	Passed	1.11	.82	5.87	3.24	.71	9.82	8.50	9.11	8.00	2.03[3]	2.00
.22	.21	.66	Inferior	1.09	.82	5.91	3.05	1.02	9.98	8.50	8.96	8.00	1.84[3]	2.00

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[3] About one-half of potash as muriate, remainder as sulfate.

[4] Potash as sulfate.

Fertilizers furnishing Nitrogen, Phosphoric Acid and Potash — Continued.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
Armour Fertilizer Works, Baltimore, Md. — Concluded.				
Armour's 2-8-3 Fertilizer,	Worcester,	No	189	6.19
Armour's 2-8-3 Fertilizer,	Fall River,	No	235	
Armour's 2-8-3 Fertilizer,	Taunton,	No	257	
Armour's 2-8-3 Fertilizer,	Middleborough,	No	360	
Armour's 2-8-3 Fertilizer,	Whitman,	No	394	
Armour's 2-8-3 Fertilizer,	Billerica,	No	466	4.91
Armour's 2-8-3 Fertilizer,	Salem,	No	511	
Armour's 2-8-3 Fertilizer,	Framingham,	No	543	
Armour's 2-8-3 Fertilizer,	Attleboro,	No	602	
Armour's 2-8-3 Fertilizer,	Granby,	No	658	
Armour's 4-8-3 Fertilizer,	Taunton,	Yes	259	9.00
Armour's 4-8-3 Fertilizer,	South Hadley,	Yes	568	
Armour's Sheep Manure,	East Longmeadow,	Yes	124	21.80
Armour's Sheep Manure,	Worcester,	Yes	672	
Armour's Sheep Manure,	Southbridge,	Yes	725	
Beach Soap Co., Lawrence, Mass.				
Beach's Advance Fertilizer,	Lawrence,	Yes	591	8.63
Berkshire Fertilizer Co., Bridgeport, Conn.				
Berkshire Complete Fertilizer,	Bradstreet,	Yes	66	10.34
Berkshire Complete Fertilizer,	Bradstreet,	Yes	67	8.44
Bon Arbor Chemical Co., Paterson, N. J.				
Bon Arbor Unsurpassed Soluble Plant Life,	Boston,	Yes	880	2.60
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.				
Bowker's Potato Phosphate, 1916,	Fall River,	Yes	241	8.37
Bowker's Potato Phosphate, 1916,	Boston,	Yes	328	
Bowker's Potato Phosphate, 1916,	Bridgewater,	Yes	368	
Bowker's Potato Phosphate, 1916,	Whitman,	Yes	395	
Bowker's Potato Phosphate, 1916,	Chelmsford,	Yes	475	9.60
Bowker's Potato Phosphate, 1916,	Framingham,	Yes	536	
Bowker's Potato Phosphate, 1916,	Brockton,	Yes	550	
Bowker's Potato Phosphate, 1916,	Fitchburg,	Yes	683	
Stockbridge General Crop Manure, 1916,	Hatfield,	Yes	65	7.75
Stockbridge General Crop Manure, 1916,	Fall River,	Yes	231	
Stockbridge General Crop Manure, 1916,	Bridgewater,	Yes	362	
Stockbridge General Crop Manure, 1916,	Whitman,	Yes	386	
Stockbridge General Crop Manure, 1916,	Boston,	Yes	446	6.32
Stockbridge General Crop Manure, 1916,	Chelmsford,	Yes	452	
Stockbridge General Crop Manure, 1916,	Brockton,	Yes	505	
Stockbridge General Crop Manure, 1916,	Natick,	Yes	585	
Stockbridge General Crop Manure, 1916,	Northampton,	Yes	641	
Stockbridge General Crop Manure, 1916,	North Grafton,	Yes	740	9.67
Stockbridge General Crop Manure, 1916,	Hudson,	Yes	773	
Stockbridge Market Garden Manure,	Taunton,	Yes	489	10.76
Bowker's Lawn and Garden Dressing,	Springfield,	Yes	129	5.94
Bowker's Lawn and Garden Dressing,	Fall River,	Yes	224	
Bowker's Lawn and Garden Dressing,	Boston,	Yes	337	
Bowker's Ammoniated Food for Flowers,	Fall River,	Yes	396	2.13
Joseph Breck & Sons Corporation, Boston, Mass.				
Ram's Head Pulverized Sheep Manure,	Lawrence,	No	593	8.81
Carter's Tested Seeds, Inc., Boston, Mass.				
Carters Anti-Clover Manure,	Boston,	Yes	379	5.57
Carters General Purpose Manure,	Boston,	Yes	384	3.92
Carters Worm Eradicating Fertilizer,	Boston,	Yes	390	5.48
Carters Complete Grass Manure,	Boston,	Yes	860	9.61

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[1] About two-thirds of potash as muriate, remainder as sulfate.

[2] Potash as sulfate.

[3] About one-third of potash as muriate, remainder as sulfate.

Fertilizers furnishing Nitrogen, Phosphoric Acid and Potash — Continued.

NITROGEN IN 100 POUNDS.						PHOSPHORIC ACID IN 100 POUNDS.							POTASH (K_2O) IN 100 POUNDS.	
				TOTAL.					TOTAL.		AVAILABLE.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
.47	.20	.94	Inferior	1.61	1.65	3.60	4.62	1.30	9.52	8.50	8.22	8.00	2.71[1]	3.00
.43	.15	1.05	Passed	1.63	1.65	3.19	5.07	1.38	9.64	8.50	8.26	8.00	2.79	3.00
1.99	1.00	.90	Passed	3.89	3.29	6.53	3.49	1.10	11.12	8.50	10.02	8.00	2.96[2]	3.00
-	-	-	Inferior	1.74	1.65	-	-	-	1.33	1.00	-	-	3.78	3.25
1.23	1.15	.65	Passed	3.03	2.50	.32	8.15	4.59	13.06	11.00	8.47	9.00	1.18	.80
.67	.24	1.84	Passed	2.75	2.50	1.63	7.58	1.43	10.64	9.00	9.21	8.00	2.34[3]	2.00
.57	.17	1.86	Passed	2.60	2.50	2.00	6.44	1.38	9.82	9.00	8.44	8.00	4.67[4]	5.00
16.06	-	-	-	16.06	15.00	6.14	-	-	6.14	4.00	6.14	4.00	4.32[2]	4.00
1.30	.19	.40	Passed	1.89	1.65	6.22	4.24	.97	11.43	11.00	10.46	10.00	1.09[5]	1.00
1.27	.07	.44	Passed	1.78	1.65	5.33	5.13	1.07	11.53	11.00	10.46	10.00	1.03[5]	1.00
2.54	.23	.60	Passed	3.37	3.29	5.42	3.81	1.10	10.33	10.00	9.23	9.00	1.18[1]	1.00
2.71	.30	.60	Passed	3.61	3.29	5.52	3.94	1.43	10.89	10.00	9.46	9.00	1.07[5]	1.00
2.29	.38	.80	Passed	3.47	3.29	5.04	3.61	1.15	9.80	10.00	8.65	9.00	1.22[1]	1.00
2.39	.38	.61	Passed	3.38	3.29	1.91	6.18	1.48	9.57	9.00	8.09	8.00	4.24[3]	4.00
1.80	.19	.51	Passed	2.50	2.47	5.10	3.98	1.02	10.10	9.00	9.08	8.00	1.11[5]	1.00
2.53	.15	.27	Passed	2.95	2.47	1.75	5.01	2.37	9.13	7.00	6.76	6.00	2.67[1]	2.00
-	-	-	Inferior	1.67	1.65	-	-	-	1.20	1.50	-	-	2.06	2.50
3.09	.76	1.38	Passed	5.23	5.70	2.36	6.62	2.30	11.28	9.00	8.98	8.00	1.60	1.25
2.33	.44	.76	Passed	3.53	3.30	1.24	4.55	2.30	8.09	6.00	5.79	5.00	1.15	1.00
.09	.05	1.88	Inferior	2.02	1.81	.32	1.55	.15	2.02	.70	1.87	-	1.43	1.10
3.55	.76	.99	Passed	5.30	4.32	8.10	1.60	.43	10.13	-	9.70	10.00	1.74	1.25

[4] About one-fifth of potash as muriate, remainder as sulfate.

[5] About one-half of potash as muriate, remainder as sulfate.

Fertilizers furnishing Nitrogen, Phosphoric Acid and Potash — Continued.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
The E. D. Chittenden Co., Bridgeport, Conn.				
Chittenden's Veg. and Onion Grower with 1 % Potash,	Leominster,	Yes	182	9.25
Chittenden's Veg. and Onion Grower with 1 % Potash,	Fall River,	Yes	237	
Chittenden's Veg. and Onion Grower with 1 % Potash,	Oxford,	Yes	767	11.05
Chittenden's Veg. and Onion Grower with 1 % Potash,	Saundersville,	Yes	803	
Chittenden's Comp. Tob. and Onion Grower with 2% Potash,	Leominster,	Yes	192	12.36
Chittenden's Comp. Tob. and Onion Grower with 2% Potash,	Charlton,	Yes	694	
Chittenden's Comp. Tob. and Onion Grower with 2% Potash,	Oxford,	Yes	768	
Chittenden's Comp. Tob. and Onion Grower with 2% Potash,	Saundersville,	Yes	805	
Chittenden's Comp. Tob. and Onion Grower with 1% Potash,	Saundersville,	Yes	800	11.57
Coe-Mortimer Co., 51 Chambers St., New York City.				
E. Frank Coe's New Englander Special,	Williamsburg,	Yes	815	7.54
E. Frank Coe's Columbian Corn and Potato Fertilizer,	Westfield,	Yes	128	8.97
E. Frank Coe's Columbian Corn and Potato Fertilizer,	Holyoke,	Yes	140	
E. Frank Coe's Standard Potato Fertilizer,	Williamsburg,	Yes	814	9.31
Essex Fertilizer Co., Boston, Mass.				
Essex 2-8-4 Fertilizer,	New Bedford,	No	275	7.74
Essex 4-8-2 Fertilizer,	New Bedford,	No	276	8.33
Essex 4-8-2 Fertilizer,	Leominster,	No	667	8.92
Essex 4-8-4 Fertilizer,	New Bedford,	No	277	8.94
R. & J. Farquhar & Co., Boston, Mass.				
Sheep Manure,	Boston,	No	879	67.45
Fertile Chemical Co., Cleveland, Ohio.				
Nitro-Fertile, Liquid Fertilizer,	Fall River,	No	397	71.92
Nitro-Fertile, Liquid Fertilizer,	Worcester,	Yes	931	66.99
Nitro-Fertile, Liquid Fertilizer,	Worcester,	No	932	78.12
Chas. W. Hastings, Stoughton, Mass.				
Ferti-Flora,	Boston,	No	496	81.32
International Agric. Corporation, Buffalo, N. Y. (Buffalo Fertilizer Works Branch).				
Buffalo Triumph,	Medway,	Yes	414	9.12
Buffalo Triumph,	West Brookfield,	Yes	792	
Buffalo Tip Top,	Framingham,	Yes	540	8.76
Buffalo Tip Top,	Pittsfield,	Yes	836	
Buffalo Economy,	Lee,	No	844	8.25
Buffalo General Favorite,	Pittsfield,	No	842	6.21
Listers Agric. Chemical Works, Newark, N. J.				
Listers Success Fertilizer, 1916,	Natick,	Yes	548	8.42
Listers Success Fertilizer, 1916,	North Hanover,	Yes	626	
Listers Success Fertilizer, 1916,	Webster,	Yes	699	7.93
Listers Success Fertilizer, 1916,	Graniteville,	Yes	795	
Listers Corn and Potato Fertilizer, 1916,	Fall River,	Yes	359	7.23
Listers Corn and Potato Fertilizer, 1916,	Amherst,	Yes	516	
Listers Corn and Potato Fertilizer, 1916,	Natick,	Yes	549	
Listers Corn and Potato Fertilizer, 1916,	Graniteville,	Yes	796	7.54
Listers Potato and Corn, No. 2,	Hatfield,	Yes	288	13.90
Listers High Grade Special for Spring Crops,	Amherst,	Yes	518	9.59
Listers Pure Standard Superphosphate of Lime, 1916,	Pittsfield,	Yes	840	10.11
Listers Potato Manure, 1916,	Graniteville,	Yes	810	6.99
Lowell Fertilizer Co., Boston, Mass.				
Lowell 2-8-4 Fertilizer,	Fall River,	Yes	214	7.20
Lowell 2-8-4 Fertilizer,	Fall River,	Yes	238	
Lowell 2-8-4 Fertilizer,	Taunton,	Yes	249	
Lowell 2-8-4 Fertilizer,	Millis,	No	614	7.11
Lowell 2-8-2 Fertilizer,	Millis	No	616	7.98
Lowell 4-8-4 Fertilizer,	Fall River,	No	236	9.50
Lowell 4-8-4 Fertilizer,	Taunton,	No	255	

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[1] Potash as sulfate.

[2] About one-third of potash as muriate, remainder as sulfate.

Fertilizers furnishing Nitrogen, Phosphoric Acid and Potash — Continued.

NITROGEN IN 100 POUNDS.						PHOSPHORIC ACID IN 100 POUNDS.							POTASH (K_2O) IN 100 POUNDS.	
				TOTAL.					TOTAL.		AVAILABLE.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.72	.13	.56	Inferior	2.41	2.47	6.22	1.87	.97	9.06	9.00	8.09	8.00	.98[1]	1.00
1.78	.17	.56	Passed	2.51	2.47	6.29	1.98	.74	9.01	9.00	8.27	8.00	1.05[2]	1.00
2.47	.17	.60	Passed	3.24	3.29	5.55	3.35	.51	9.41	9.00	8.90	8.00	2.00[1]	2.00
2.68	.11	.50	Passed	3.36	3.29	6.89	1.73	.74	9.36	9.00	8.62	8.00	1.09[3]	1.00
.67	.04	.19	Passed	.90	.82	5.10	2.96	.79	8.85	9.00	8.06	8.00	.84[3]	1.00
.92	.12	.29	Passed	1.33	1.23	5.93	4.20	.94	11.07	11.00	10.13	10.00	1.31[3]	1.00
2.34	.24	.66	Passed	3.24	3.29	5.74	3.73	1.02	10.49	10.00	9.47	9.00	1.26[4]	1.00
.94	.31	.56	Passed	1.81	1.64	5.84	2.66	.84	9.34	9.00	8.50	8.00	3.55	4.00
2.02	.57	.70	Passed	3.29	3.28	5.70	3.16	.46	9.32	9.00	8.86	8.00	1.59	2.00
1.94	.41	.74	Passed	3.09	3.28	5.33	3.06	.87	9.26	9.00	8.39	8.00	1.92	2.00
1.58	.62	.88	Passed	3.08	3.28	6.67	1.93	.84	9.44	9.00	8.60	8.00	3.71	4.00
–	–	–	Inferior	.68	1.00	–	–	–	.74	.78	–	–	1.46	1.50
2.30	–	–	–	2.30	2.00	2.30	–	–	2.30	3.00	2.30	3.00	2.08	3.00
1.46	–	–	–	1.46	2.00	3.19	–	–	3.19	3.00	3.19	3.00	4.49[3]	3.00
1.51	–	–	–	1.51	2.00	1.67	–	–	1.67	3.00	1.67	3.00	2.19	3.00
3.17	–	–	–	3.17	3.25	3.01	–	–	3.01	3.67	3.01	3.67	.12	3.30
1.05	.20	.63	Passed	1.88	1.60	6.35	2.40	1.53	10.28	9.00	8.75	8.00	1.96	2.00
.61	.03	.42	Inferior	1.06	.80	1.56	7.17	1.30	10.03	9.00	8.73	8.00	1.69	2.00
.68	.25	.36	Passed	1.29	1.65	6.19	4.13	1.68	12.00	11.00	10.32	10.00	.45[3]	1.00
.36	.12	.32	Passed	.80	.80	4.08	3.45	.89	8.42	8.00	7.53	7.00	.78[2]	1.00
1.04	.14	.31	Passed	1.49	1.23	6.03	3.95	1.45	11.43	11.00	9.98	10.00	1.17[2]	1.00
.98	.10	.43	Passed	1.51	1.23	6.12	4.59	1.15	11.86	11.00	10.71	10.00	1.18[4]	1.00
1.60	.15	.37	Passed	2.12	2.00	4.50	4.00	.79	9.29	9.00	8.50	8.00	1.07[3]	1.00
1.72	.08	.50	Passed	2.30	2.00	4.66	4.04	.99	9.69	9.00	8.70	8.00	1.32[2]	1.00
1.20	.34	.80	Passed	2.34	2.06	8.06	2.64	2.32	13.02	11.00	10.70	10.00	.72	1.00
1.58	.16	.50	Passed	2.24	2.06	5.52	4.74	.97	11.23	11.00	10.26	10.00	1.26[3]	1.00
1.44	.19	.88	Passed	2.51	2.47	4.18	5.23	1.02	10.43	10.00	9.41	9.00	1.05	1.00
2.84	.17	.92	Passed	3.93	4.11	4.40	3.67	1.22	9.29	9.00	8.07	8.00	1.63[2]	1.00
.85	.43	.60	Passed	1.88	1.64	5.90	2.72	.82	9.44	9.00	8.62	8.00	3.88	4.00
.54	.45	.68	Passed	1.67	1.64	5.40	2.69	.69	8.78	9.00	8.09	8.00	3.59	4.00
.71	.29	.50	Passed	1.50	1.64	6.29	1.82	.77	8.88	9.00	8.11	8.00	1.88	2.00
1.91	.56	.77	Passed	3.24	3.28	5.74	2.76	.56	9.06	9.00	8.50	8.00	3.65	4.00

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[3] About one-half of potash as muriate, remainder as sulfate.

[4] About two-thirds of potash as muriate, remainder as sulfate.

Fertilizers furnishing Nitrogen, Phosphoric Acid and Potash — Continued.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
Mapes Formula and Peruvian Guano Co., New York City.				
Mapes Potato Manure, 1916,	Sunderland,	Yes	301	10.70
Mapes Potato Manure, 1916,	Springfield,	Yes	351	
Mapes Potato Manure, 1916,	Northampton,	Yes	640	
Mapes Potato Manure, 1916,	Fitchburg,	Yes	681	
Mapes Potato Manure, 1916,	Worcester,	Yes	758	7.37
Mapes Potato Manure, 1916,	Framingham,	Yes	771	
Mapes Tobacco Starter Improved,	Northampton,	Yes	150	8.37
Mapes Tobacco Starter Improved,	Westfield,	Yes	856	
Mapes Tobacco Manure,	Westfield,	Yes	858	5.37
Mapes General Special,	Sunderland,	Yes	298	8.95
Mapes General Special,	Boston,	Yes	460	
Mapes General Special,	Fitchburg,	Yes	680	
Mapes Top Dresser Full Strength, 1916,	Sunderland,	Yes	302	4.25
Mapes Top Dresser Full Strength, 1916,	Boston,	Yes	461	
Mapes Top Dresser Half Strength, 1916,	Boston,	Yes	462	6.53
Mapes Corn Manure, 1916,	Boston,	No	311	9.10
Mapes Corn Manure, 1916,	Springfield,	No	350	
Mapes Corn Manure, 1916,	Northampton,	No	635	
Mapes Corn Manure, 1916,	Fitchburg,	No	682	
Mapes Corn Manure, 1916,	Worcester,	No	756	6.71
Mapes Corn Manure, 1916,	Framingham,	No	761	
National Fertilizer Co., 92 State St., Boston, Mass.				
National Potato Phosphate, 1916,	Framingham,	Yes	587	7.57
National Potato Phosphate, 1916,	Sturbridge,	Yes	736	
National Potato Phosphate, 1916,	Northborough,	Yes	746	
National XXX Fish and Potash, 1916,	Framingham,	Yes	547	10.90
National XXX Fish and Potash, 1916,	South Deerfield,	Yes	578	
National XXX Fish and Potash, 1916,	Northborough,	Yes	748	8.33
National Eureka Potato Fertilizer, 1916,	Framingham,	Yes	539	9.85
National Eureka Potato Fertilizer, 1916,	Sturbridge,	Yes	728	
National Eureka Potato Fertilizer, 1916,	Northborough,	Yes	751	
National Complete Root and Grain Fertilizer, 1916,	Bridgewater,	Yes	896	10.12
National Pine Tree State Potato Manure,	Bradstreet,	Yes	153	10.91
National Pine Tree State Potato Manure,	Bradstreet,	No	157	8.76
National Universal Grain and Potato Fertilizer,	Northborough,	Yes	747	7.24
National Extra High Grade Potato Fertilizer,	West Springfield,	No	143	8.94
National Plant Food Co., Pensacola, Fla.				
Red Snapper Plant Food,	Manufacturer's sample	Yes	925	5.86
Natural Guano Co., Aurora, Ill.				
Sheep's Head Brand Pulverized Sheep Manure,	Concord,	Yes	370	7.90
Sheep's Head Brand Pulverized Sheep Manure,	Norwood,	Yes	463	
Sheep's Head Brand Pulverized Sheep Manure,	Brockton,	Yes	504	
Sheep's Head Brand Pulverized Sheep Manure,	Framingham,	Yes	535	
Sheep's Head Brand Pulverized Sheep Manure,	Danvers,	Yes	556	9.00
Sheep's Head Brand Pulverized Sheep Manure,	Medfield,	Yes	622	
Sheep's Head Brand Pulverized Sheep Manure,	Webster,	Yes	697	
Olds & Whipple, Hartford, Conn.				
Special Complete Corn, Onion and Potato Fertilizer,	Hadley,	Yes	348	10.07
Pulverized Manure Co., Chicago, Ill.				
Wizard Brand Pulverized Sheep Manure,	Holyoke,	Yes	144	9.49
Wizard Brand Pulverized Sheep Manure,	Worcester,	Yes	197	
Wizard Brand Pulverized Sheep Manure,	Fall River,	Yes	221	
Wizard Brand Pulverized Sheep Manure,	Springfield,	Yes	346	
Wizard Brand Pulverized Sheep Manure,	Dighton,	Yes	486	
Wizard Brand Cattle Manure,	Holyoke,	Yes	138	6.35

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[1] About one-half of potash as muriate, remainder as sulfate.

[2] Potash as sulfate.

[3] About two-thirds of potash as muriate, remainder as sulfate.

Fertilizers furnishing Nitrogen, Phosphoric Acid and Potash — Continued.

Nitrogen in 100 Pounds.						Phosphoric Acid in 100 Pounds.							Potash (K_2O) in 100 Pounds.	
				TOTAL.					TOTAL.		AVAILABLE.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
3.05	.22	.59	Inferior	3.86	3.71	3.02	5.27	2.09	10.38	8.00	8.29	8.00	1.35[1]	1.00
3.05	.20	.61	Inferior	3.86	3.71	1.98	6.24	2.32	10.54	8.00	8.22	8.00	80[1]	1.00
2.68	.28	1.16	Inferior	4.12	4.12	1.47	4.61	4.00	10.08	8.00	6.08	6.00	.95[2]	1.00
4.65	.39	3.36	Passed	8.40	8.23	-	6.23	3.57	9.80	8.00	6.23	5.00	.66[3]	1.00
4.65	.38	.86	Inferior	5.89	5.76	1.53	5.44	3.11	10.08	8.00	6.97	6.00	1.15[1]	1.00
10.54	.36	.20	Passed	11.10	9.88	.35	5.27	1.45	7.07	8.00	5.62	5.00	2.39[4]	1.00
3.74	.71	.18	Passed	4.63	4.94	.48	2.02	1.58	4.08	4.00	2.50	2.50	1.45[1]	.50
1.95	.10	.56	Inferior	2.61	2.47	2.90	6.06	2.60	11.56	10.00	8.96	8.00	.57[3]	1.00
2.12	.03	.40	Inferior	2.55	2.47	2.36	5.37	4.18	11.91	10.00	7.73	8.00	.54	1.00
1.64	.13	.47	Passed	2.24	2.06	4.50	3.67	.94	9.11	9.00	8.17	8.00	1.09[3]	1.00
1.56	.16	.44	Passed	2.16	2.06	6.25	4.24	.99	11.48	11.00	10.49	10.00	1.00[1]	1.00
1.54	.13	.53	Passed	2.20	2.06	5.33	4.82	.97	11.12	11.00	10.15	10.00	1.24[1]	1.00
1.68	.19	.60	Passed	2.47	2.47	4.78	4.96	1.10	10.84	10.00	9.74	9.00	1.20[1]	1.00
2.48	.15	.84	Passed	3.47	3.29	4.49	4.59	1.48	10.56	10.00	9.08	9.00	1.32[1]	1.00
2.51	.45	.58	Passed	3.54	3.29	2.27	6.50	2.25	11.02	9.00	8.77	8.00	4.12[4]	4.00
1.72	1.04	.46	Passed	3.22	3.29	4.02	3.82	1.19	9.03	9.00	7.84	8.00	3.64[3]	4.00
.60	.02	.26	Passed	.88	.82	3.86	4.25	.69	8.80	9.00	8.11	8.00	1.15[3]	1.00
3.08	.34	.70	Passed	4.12	4.11	5.42	5.27	1.07	11.76	11.00	10.69	10.00	3.45[5]	4.00
.42	.63	4.13	Passed	5.18	5.00	.34	6.36	6.86	13.56	12.00	6.70	4.00	1.35[5]	1.25
-	-	-	Inferior	2.34	2.25	-	-	-	2.04	1.25	-	-	2.09	1.50
-	-	-	Inferior	2.44	2.25	-	-	-	1.99	1.25	-	-	2.23	1.50
1.43	.27	1.22	Passed	2.92	2.45	1.53	7.47	3.04	12.04	8.00	9.00	8.00	2.33[4]	2.00
-	-	-	Inferior	1.92	1.80	-	-	-	1.63	1.00	-	-	1.98	1.00
-	-	-	Inferior	2.06	1.80	-	-	-	2.09	1.00	-	-	2.34	1.00

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[4] About one-third of potash as muriate, remainder as sulfate.

[5] About one-fourth of potash as muriate, remainder as sulfate.

Fertilizers furnishing Nitrogen, Phosphoric Acid and Potash — Concluded.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
Rogers & Hubbard Co., Middletown, Conn.				
Rogers & Hubbard's Tobacco Grower, Vegetable Formula,	North Hadley,	Yes	100	8.12
Rogers & Hubbard's Tobacco Grower, Vegetable Formula,	Sunderland,	Yes	203	
Rogers & Hubbard's Tobacco Grower, Vegetable Formula,	Amherst,	Yes	111	7.88
Rogers & Hubbard's Tobacco Grower, Vegetable Formula,	Russellville,	Yes	882	7.82
Hubbard's Bone Base Soluble Potato Manure,	Whately,	Yes	171	8.38
Hubbard's Bone Base Soluble Potato Manure,	Plymouth,	Yes	624	
Ross Brothers Co., Worcester, Mass.				
Special Potato and Vegetable Fertilizer,	Worcester,	Yes	193	6.78
High Grade Potato and Vegetable Fertilizer,	Worcester,	No	671	8.60
High Grade Potato and Vegetable Fertilizer,	Worcester,	No	928	7.02
Corn, Grass and Grain Fertilizer,	Worcester,	No	887	7.48
Worcester Special Lawn Dressing Fertilizer,	Worcester,	Yes	188	10.75
F. S. Royster Guano Co., Baltimore, Md.				
Royster's Fish and Potash Mixture,	Deerfield,	Yes	816	4.77
Royster's Dreadnought Fertilizer,	Pittsfield,	Yes	832	6.53
Royster's Dreadnought Fertilizer,	Adams,	Yes	848	
Royster's Drillwell Phosphate,	Westfield,	No	904	4.18
Sanderson Fertilizer & Chem. Co., New Haven, Conn.				
Sanderson's Formula A, 1916,	Dighton,	Yes	491	11.80
Sanderson's Corn Superphosphate, 1916,	New Bedford,	Yes	278	7.09
Sanderson's Potato Manure, 1916,	Taunton,	Yes	488	10.67
Sanderson's Potato Manure, 1916,	North Amherst,	Yes	647	
Sanderson's Potato Manure, 1916,	Three Rivers,	Yes	821	9.18
Sanderson's Potato Manure, 1916,	Pittsfield,	Yes	838	
Sanderson's Atlantic Coast Bone, Fish and Potash, 1916,	Fall River,	Yes	218	10.23
Sanderson's Atlantic Coast Bone, Fish and Potash, 1916,	New Bedford,	Yes	250	
Sanderson's Atlantic Coast Bone, Fish and Potash, 1916,	South Deerfield,	Yes	581	
Sanderson's Atlantic Coast Bone, Fish and Potash, 1916,	North Amherst,	Yes	646	
Wm. Thomson & Son Ltd., Clovenfords, Scot.				
Thomson's Vine, Plant and Vegetable Manure,	Boston,	Yes	313	7.60
Thomson's Vine, Plant and Vegetable Manure,	Boston,	Yes	316	
Thomson's Special Chrysanthemum Manure,	Boston,	Yes	492	5.05
Whitman & Pratt Rendering Co., Boston, Mass.				
Whitman & Pratt's 2-8-2 Brand,	Woburn,	Yes	469	6.41
Whitman & Pratt's 2-8-2 Brand,	Hudson,	Yes	782	
Whitman & Pratt's 2-8-4 Brand,	Palmer,	Yes	900	3.47
Whitman & Pratt's 4-8-4 Brand,	Mattapan,	No	888	11.22
Wilcox Fertilizer Co., Mystic, Conn.				
Potato, Onion and Vegetable Phosphate,	Amherst,	Yes	71	10.09
Tobacco Special Fertilizer,	Amherst,	Yes	73	2.53
Fish and Potash,	Amherst,	Yes	69	9.08
Fish and Potash,	Fall River,	Yes	244	

[1] About one-half of potash as muriate, remainder as sulfate.

[2] Potash as sulfate.

Fertilizers furnishing Nitrogen, Phosphoric Acid and Potash — Concluded.

NITROGEN IN 100 POUNDS.						PHOSPHORIC ACID IN 100 POUNDS.							POTASH (K_2O) IN 100 POUNDS.	
				TOTAL.					TOTAL.		AVAILABLE.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
1.56	.41	3.33	Passed	5.30	5.00	.57	3.86	2.02	6 45	5.00	4.43	4.00	.87[1]	.50
1.65	.23	3.53	Passed	5.41	5.00	trace	3.45	2.60	6.05	5.00	3.45	4.00	.99[2]	.50
1.61	.20	3.57	Passed	5.38	5.00	.13	4.59	1.79	6.51	5.00	4.72	4.00	1.41[2]	.50
2.44	.88	1.09	Passed	4.41	4.25	1.30	8.85	4.75	14.90	13.00	10.15	10.00	1.28[1]	1.00
1.22	.51	1.43	Passed	3.16	2.88	5.59	2.88	1.61	10.08	8.50	8.47	8.00	1.03	1.00
.16	.48	1.10	Passed	1.74	2.88	2.53	6.66	1.91	11.10	8 50	9.19	8.00	3.35[3]	3.00
.14	.49	1.18	Passed	1.81	2.88	4.50	5.09	2.17	11.76	8.50	9.59	8.00	3.27[3]	3.00
.40	.42	1.71	Passed	2.53	2.88	4.97	3.20	1.17	9.34	8.50	8.17	8.00	1.00	1.00
1.53	.14	1.39	Passed	3.06	2.88	8.61	.07	.71	9.39	8.50	8.68	8.00	1.12	1.00
1.04	–	.81	Passed	1.85	1.65	2.55	4.44	2.70	9.69	8.50	6.99	8.00	1.14[1]	1.00
1.09	.26	.53	Passed	1.88	1.65	4.15	4.29	1.02	9.46	8.50	8.44	8.00	1.76[3]	2.00
1.12	.17	.78	Passed	2.07	2.47	6.48	1.43	1.15	9.06	8.50	7.91	8.00	1.07[2]	1.00
1.36	.65	1.25	Passed	3.26	3.29	3.70	5.94	1.43	11.07	10.00	9.64	9.00	1.30	1.00
.28	.75	.89	Passed	1.92	1.65	4.06	5.68	2.35	12.09	11.00	9.74	10.00	1.16[1]	1.00
1.38	.41	.85	Passed	2.64	2.06	4.69	5.23	1.15	11.07	9.00	9.92	8.00	.95[4]	1.00
1.19	.13	.92	Passed	2.24	2.06	5.38	3.58	.99	9.95	9.00	8.96	8.00	1.18[1]	1.00
.75	.30	.75	Passed	1.80	1.65	8.58	2.24	1.40	12.22	10.00	10.82	9.00	1.30[4]	1.00
1.81	.60	1.12	Passed	3.53	3.25	6.29	3.64	2.83	12.76	11.50	9.93	8.00	2.33[1]	1.50
3.06	.74	1.61	Passed	5.41	4.25	5.42	4.32	3.55	13.29	10.50	9.74	9.00	4.21	1.50
1.13	.14	.73	Passed	2.00	1.67	2.97	4.78	2.02	9.77	10.00	7.75	8.00	2.03[1]	2.00
1.11	.21	.50	Passed	1.82	1.65	2.10	4.21	2.98	9.29	9 00	6.31	8.00	4.63[2]	4.00
2.27	.60	.63	Passed	3.50	3.28	5.68	3.20	.05	8.93	9.00	8.88	8.00	3.20	4.00
2.05	.35	1.05	Passed	3.45	3.30	8.04	2.45	.66	11.15	10.00	10.49	9.00	1.34[1]	1.00
1.32	.07	3.10	Passed	4.49	4.12	1.44	4.58	3.32	9.34	6.00	6.02	4.00	1.38[4]	1.00
.81	.87	.97	Passed	2.65	2.46	7.44	2.56	2.73	12.73	9.00	10.00	8.00	1.09	1.00

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[3] About one-third of potash as muriate, remainder as sulfate.

[4] About two-thirds of potash as muriate, remainder as sulfate.

Fertilizers furnishing Nitrogen and Phosphoric Acid.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
W. H. Abbott, Holyoke, Mass.				
Abbott's Animal Fertilizer,	Bradstreet,	Yes	52	9.24
Abbott's Eagle Brand,	Holyoke,	No	906	9.29
Abbott's Eagle Brand,	Manufacturer's sample,	No	939	9.58
American Agric. Chem. Co., 92 State St., Boston, Mass.				
Bradley's Grain Fertilizer,	Leominster,	Yes	185	8.93
Bradley's Special Corn Phosphate without Potash,	Bradstreet,	Yes	59	6.69
Bradley's Special Corn Phosphate without Potash,	Leominster,	Yes	183	
Bradley's Special Corn Phosphate without Potash,	Boston,	Yes	314	
Bradley's Special Corn Phosphate without Potash,	Medway,	Yes	408	8.73
Bradley's Special Corn Phosphate without Potash,	Beverly,	Yes	412	
Bradley's Special Corn Phosphate without Potash,	Lowell,	Yes	456	
Bradley's Special Corn Phosphate without Potash,	Framingham,	Yes	564	
Bradley's Special Corn Phosphate without Potash,	Sunderland,	Yes	722	7.66
Bradley's Special Corn Phosphate without Potash,	Ware,	Yes	826	
Bradley's Special Potato Fertilizer without Potash,	New Bedford,	Yes	272	7.85
Bradley's Special Potato Fertilizer without Potash,	Boston,	Yes	305	
Bradley's Special Potato Fertilizer without Potash,	Norwood,	Yes	498	
Bradley's Special Potato Fertilizer without Potash,	Haverhill,	Yes	597	
Bradley's Special Potato Fertilizer without Potash,	Rockland,	Yes	623	
Bradley's Special Potato Fertilizer without Potash,	Marlborough,	Yes	769	9.66
Bradley's XL Superphosphate without Potash,	New Bedford,	Yes	274	8.36
Bradley's XL Superphosphate without Potash,	Boston,	Yes	329	
Bradley's XL Superphosphate without Potash,	Millis,	Yes	406	
Bradley's XL Superphosphate without Potash,	Beverly,	Yes	410	
Bradley's Special XL Superphosphate without Potash,	Lowell,	Yes	451	9.01
Bradley's Special XL Superphosphate without Potash,	Framingham,	Yes	534	
Bradley's Special XL Superphosphate without Potash,	Belchertown,	Yes	657	
Bradley's Special XL Superphosphate without Potash,	Sunderland,	Yes	719	
Bradley's Special Potato Manure without Potash,	Fall River,	Yes	227	6.59
Bradley's Special Potato Manure without Potash,	Boston,	Yes	331	
Bradley's Special Potato Manure without Potash,	Middleborough,	Yes	356	
Bradley's Special Potato Manure without Potash,	Millis,	Yes	405	
Bradley's Special Potato Manure without Potash,	Lowell,	Yes	448	10.32
Bradley's Root Crop Manure,	Bradstreet,	Yes	64	8.10
Bradley's Root Crop Manure,	Fall River,	Yes	233	
Bradley's Root Crop Manure,	Medway,	Yes	407	
Bradley's Root Crop Manure,	Beverly,	Yes	413	
Bradley's Root Crop Manure,	Medfield,	Yes	615	10.67
Bradley's Root Crop Manure,	Ware,	Yes	819	
Bradley's Liberty Brand Potato Manure,	Fall River,	Yes	230	10.04
Bradley's Maine Potato Special,	Boston,	Yes	317	9.40
Bradley's Maine Potato Special,	Beverly,	Yes	404	
Bradley's Maine Potato Special,	Fitchburg,	Yes	675	9.85
Bradley's Maine Potato Special,	West Upton,	Yes	739	
Bradley's Maine Potato Special,	Monson,	Yes	829	
Breck's Extra Lawn and Garden Dressing,	Boston,	Yes	308	9.05
Farquhar's Special Vegetable and Potato without Potash,	Boston,	Yes	321	9.94
Farquhar's Spec. Lawn and Garden Dress. without Potash,	Boston,	Yes	318	8.94
Pacific Special Potato Fertilizer without Potash,	Spencer,	Yes	707	9.00
Special Soluble Pacific Guano without Potash,	Spencer,	Yes	705	9.08
Quinnipiac Special Corn Manure without Potash,	Milford,	Yes	733	8.78
Quinnipiac Special Corn Manure without Potash,	Pittsfield,	Yes	835	
Quinnipiac Special Potato Phosphate without Potash,	Milford,	Yes	741	8.73
Williams & Clark Spec. Americus Corn Phos. without Pot.,	Norwood,	Yes	501	8.73
Williams & Clark Spec. Americus Corn Phos. without Pot.,	Ware,	Yes	820	
Williams & Clark Spec. Am. Potato Manure without Pot.,	Norwood,	Yes	497	9.48
Williams & Clark Spec. Am. Potato Manure without Pot.,	Graniteville,	Yes	794	
Grain and Seeding Fertilizer,	Haverhill,	Yes	594	7.84
Cereal and Root Fertilizer,	North Amherst,	Yes	146	9.08
Cereal and Root Fertilizer,	North Amherst,	Yes	151	
Cereal and Root Fertilizer,	North Amherst,	Yes	422	
Cereal and Root Fertilizer,	South Amherst,	Yes	520	

Fertilizers furnishing Nitrogen and Phosphoric Acid.

NITROGEN IN 100 POUNDS.						PHOSPHORIC ACID IN 100 POUNDS.						
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	TOTAL.		Water Soluble.	Reverted.	Insoluble.	TOTAL.		AVAILABLE.	
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.
.56	.73	2.57	Passed	3.86	3.00	.78	10.09	9.77	20.64	18.00	10.87	10.00
.66	.63	2.15	Passed	3.44	4.00	trace	9.49	8.93	18.42	15.00	9.49	8.00
.59	.51	2.46	Passed	3.56	4.00	trace	9.35	6.85	16.20	15.00	9.35	8.00
.74	.12	.22	Passed	1.08	.82	4.57	5.02	1.35	10.94	11.00	9.59	10.00
1.25	.12	.41	Passed	1.78	1.65	5.12	5.22	1.10	11.44	11.00	10.34	10.00
1.18	.16	.44	Passed	1.78	1.65	5.04	5.42	1.43	11.89	11.00	10.46	10.00
1.18	.37	.33	Passed	1.88	1.65	4.97	5.32	1.68	11.97	11.00	10.29	10.00
1.04	.25	.65	Passed	1.94	1.65	5.61	4.72	1.51	11.84	11.00	10.33	10.00
1.15	.10	.59	Passed	1.84	1.65	4.34	4.85	2.04	11.23	11.00	9.19	10.00
2.02	.39	.58	Passed	2.99	2.47	6.38	3.75	1.10	11.23	11.00	10.13	10.00
1.72	.38	.55	Passed	2.65	2.47	5.97	4.67	.92	11.56	11.00	10.64	10.00
1.85	.35	.47	Passed	2.67	2.47	6.06	4.19	1.33	11.58	11.00	10.25	10.00
1.65	.21	.64	Passed	2.50	2.47	5.27	4.84	1.40	11.51	11.00	10.11	10.00
2.63	.39	.53	Passed	3.55	3.29	6.41	4.30	1.10	11.81	11.00	10.71	10.00
2.58	.41	.67	Passed	3.66	3.29	6.03	4.00	1.45	11.48	11.00	10.03	10.00
2.92	.39	.65	Passed	3.96	4.11	5.84	3.26	1.79	10.89	9.00	9.10	8.00
3.10	39	.89	Passed	4.38	4.11	6.53	3.85	1.66	12.04	11.00	10.38	10.00
3.08	.39	.73	Passed	4.20	4.11	6.61	5.28	.79	12.86	11.00	11.89	10.00
3.09	.39	.70	Passed	4.18	4.11	5.74	2.73	1.40	9.87	9.00	8.47	8.00
2.54	.48	.65	Passed	3.67	3.29	6.42	3.60	1.33	11.35	11.00	10.02	10.00
3.23	.39	.57	Passed	4.19	4.11	6.99	3.42	2.12	12.53	11.00	10.41	10.00
1.34	.07	.34	Passed	1.75	1.65	5.29	5.22	1.10	11.61	11.00	10.51	10.00
1.29	.16	.39	Passed	1.84	1.65	4.95	5.66	.74	11.35	11.00	10.61	10.00
1.15	.29	.47	Passed	1.91	1.65	5.55	5.39	1.25	12.19	11.00	10.94	10.00
1.25	-	.62	Passed	1.87	1.65	5.36	5.20	1.05	11.61	11.00	10.56	10.00
1.05	.28	.48	Passed	1.81	1.65	5.84	4.57	1.20	11.61	11.00	10.41	10.00
1.05	.22	.47	Passed	1.74	1.65	5.29	5.04	1.30	11.63	11.00	10.33	10.00
1.05	.37	.46	Passed	1.88	1.65	5.23	5.15	2.04	12.42	11.00	10.38	10.00
1.78	.27	.55	Passed	2.60	2.47	6.08	4.43	.97	11.48	11.00	10.51	10.00

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
American Agricultural Chemical Co. — Concluded.				
Cereal and Root Fertilizer,	Southborough,	Yes	764	11.25
Special Vegetable Fertilizer,	Sunderland,	Yes	159	9.44
Special Vegetable Fertilizer,	Norwood,	Yes	502	
Special Vegetable Fertilizer,	South Amherst,	Yes	517	
Special Vegetable Fertilizer,	Spencer,	Yes	706	10.45
Special Vegetable Fertilizer,	Graniteville,	Yes	793	
Valley Tobacco Fertilizer,	Hadley,	Yes	902	6.16
Five Eight,	Monson,	Yes	903	8.54
Extra Quality Potato Manure,	Milford,	Yes	742	14.04
Extra Quality Potato Manure,	Marlborough,	Yes	766	
Extra Quality Potato Manure,	Pepperell,	Yes	784	
Odorless Grass and Lawn Top Dress. without Potash,	Middleborough,	Yes	339	8.73
Odorless Grass and Lawn Top Dress. without Potash,	Beverly,	Yes	458	
Odorless Grass and Lawn Top Dress. without Potash,	Norwood,	Yes	499	
Odorless Grass and Lawn Top Dress. without Potash,	Medfield,	Yes	613	8.26
Odorless Grass and Lawn Top Dress. without Potash,	Fitchburg,	Yes	677	
Odorless Grass and Lawn Top Dress. without Potash,	Pepperell,	Yes	783	
Complete Tobacco Manure without Potash,	Bradstreet,	Yes	61	6.55
Complete Tobacco Manure without Potash,	North Amherst,	Yes	153	
High Grade Grass Top Dressing without Potash,	Rockland,	Yes	878	10.00
Ammoniated Fertilizer AA,	Athol,	Yes	911	9.95
Ammoniated Fertilizer AAA,	Middleborough,	Yes	866	9.67
Ammoniated Fertilizer AAAA,	Middleborough,	Yes	872	10.24
Ammoniated Fertilizer A,	Milford,	Yes	734	8.76
Ammoniated Fertilizer A,	Southborough,	Yes	772	
Ammoniated Fertilizer A,	Pepperell,	Yes	785	
Ammoniated Fertilizer A,	Ware,	Yes	825	
Armour Fertilizer Works, Baltimore, Md.				
Armour's 2-10 Fertilizer,	East Longmeadow,	Yes	126	6.33
Armour's 2-10 Fertilizer,	Middleborough,	Yes	341	
Armour's 2-10 Fertilizer,	Billerica,	Yes	468	
Armour's 4-10 Fertilizer,	Amherst,	Yes	70	10.23
Armour's 4-10 Fertilizer,	East Longmeadow,	Yes	125	
Armour's 4-10 Fertilizer,	Sunderland,	Yes	662	
Armour's Special Tobacco Grower, No. 2,	Springfield,	Yes	570	6.05
Armour's Special Tobacco Grower, No. 2,	West Hatfield,	Yes	886	
Beach Soap Co., Lawrence, Mass.				
Beach's Corn and Vegetable Fertilizer,	Lawrence,	Yes	592	6.48
Berkshire Fertilizer Co., Bridgeport, Conn.				
Berkshire Tobacco Grower,	North Hadley,	Yes	95	8.09
Berkshire Tobacco Grower,	North Hadley,	Yes	98	
Berkshire Tobacco Grower,	Sunderland,	Yes	173	
Berkshire Tobacco Grower,	Amherst,	Yes	99	6.47
Berkshire Tobacco Grower,	Sunderland,	Yes	161	9.30
Berkshire Tobacco Grower,	Sunderland,	Yes	180	
Berkshire Ammoniated Bone Phosphate,	Upton,	Yes	732	7.60
Berkshire Ammoniated Bone Phosphate,	Great Barrington,	Yes	833	
Berkshire Potato and Vegetable Phosphate,	Westfield,	Yes	477	9.75
Berkshire Potato and Vegetable Phosphate,	Upton,	Yes	731	9.02
Berkshire Root Fertilizer,	North Hadley,	Yes	93	13.89
Berkshire Root Fertilizer,	North Hadley,	Yes	101	
Berkshire Root Fertilizer,	Sunderland,	Yes	172	
Berkshire Root Fertilizer,	Sunderland,	Yes	177	
Berkshire Root Fertilizer,	Amherst,	Yes	102	10.21
Berkshire Root Fertilizer,	North Hadley,	Yes	418	11.00
Berkshire Market Garden Fertilizer,	North Hadley,	Yes	112	12.38
Berkshire Market Garden Fertilizer,	Sunderland,	Yes	157	
Berkshire Market Garden Fertilizer,	Sunderland,	Yes	160	
Berkshire Market Garden Fertilizer,	South Deerfield,	Yes	169	
Berkshire Market Garden Fertilizer,	North Hadley,	Yes	375	11.10
Berkshire Grass Special,	North Hadley,	Yes	94	9.85
Berkshire Grass Special,	Sunderland,	Yes	162	

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

Nitrogen in 100 Pounds.						Phosphoric Acid in 100 Pounds.						
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.	
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.
1.64	.21	.63	Passed	2.48	2.47	5.27	6.08	.03	11.38	11.00	11.35	10.00
2.61	.36	.67	Passed	3.64	3.29	6.68	3.68	1.30	11.66	11.00	10.36	10.00
2.51	.16	.66	Passed	3.33	3.29	5.87	4.52	1.35	11.74	11.00	10.39	10.00
1.19	–	2.99	Passed	4.18	4.11	.96	3.81	.33	5.10	5.00	4.77	4.00
3.22	.04	.95	Passed	4.21	4.11	5.17	3.58	1.15	9.90	9.00	8.75	8.00
3.16	.19	.89	Passed	4.24	4.11	6.48	3.55	1.48	11.51	11.00	10.03	10.00
3.22	.28	.66	Passed	4.16	4.11	6.89	3.44	1.20	11.53	11.00	10.33	10.00
3.15	.24	.77	Passed	4.16	4.11	6.38	4.08	1.43	11.89	11.00	10.46	10.00
1.09	.33	3.47	Passed	4.89	4.53	1.02	3.88	.23	5.13	4.00	4.90	3.00
5.03	.57	.73	Passed	6.33	6.56	5.71	3.43	1.12	10.26	9.00	9.14	8.00
.94	.25	.70	Passed	1.89	1.61	5.14	4.87	1.88	11.89	11.00	10.01	10.00
1.70	.38	.39	Passed	2.47	2.47	5.87	4.31	1.63	11.81	11.00	10.18	10.00
2.58	.16	.81	Passed	3.55	3.29	6.53	3.93	1.40	11.86	11.00	10.46	10.00
.57	.03	.33	Passed	.93	.82	5.29	4.69	1.12	11.10	11.00	9.98	10.00
.37	.10	1.28	Passed	1.75	1.65	9.03	1.53	.97	11.53	10.50	10.56	10.00
1.89	.38	1.17	Passed	3.44	3.29	7.83	2.66	1.53	12.02	10.50	10.49	10.00
.95	.04	3.29	Passed	4.38	4.11	2.68	1.32	1.10	5.10	4.50	4.00	4.00
1.05	1.14	.87	Passed	3.06	2.05	1.38	9.69	3.88	14.95	12.00	11.07	10.00
1.36	.57	2.83	Passed	4.76	4.11	1.44	3.00	.23	4.67	4.00	4.44	3.00
1.57	.38	2.57	Passed	4.52	4.11	1.34	2.26	.41	4.01	4.00	3.60	3.00
1.33	.10	3.05	Passed	4.48	4.11	1.40	2.37	.64	4.41	4.00	3.77	3.00
.49	.08	.82	Passed	1.39	.80	1.47	8.25	1.35	11.07	11.00	9.72	10.00
.92	.03	1.15	Passed	2.10	1.70	3.03	7.76	.36	11.15	11.00	10.79	10.00
.94	.02	.92	Passed	1.88	1.70	4.25	6.59	1.15	11.99	11.00	10.84	10.00
1.18	.19	1.48	Passed	2.85	2.50	3.13	5.54	.97	9.64	9.00	8.67	8.00
1.23	.34	1.21	Passed	2.78	2.50	4.40	3.57	.79	8.76	9.00	7.97	8.00
1.19	–	1.42	Passed	2.61	2.50	2.49	6.43	.54	9.46	9.00	8.92	8.00
1.46	.45	1.70	Passed	3.61	3.30	1.40	6.59	1.86	9.85	9.00	7.99	8.00
1.37	.28	1.82	Passed	3.47	3.30	.55	7.26	1.02	8.83	9.00	7.81	8.00
3.64	.23	1.58	Passed	5.45	5.00	1.58	3.75	.79	6.12	6.00	5.33	5.00

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.				
Bowker's One Ten Sure Crop,	New Bedford,	Yes	273	8.05
Bowker's One Ten Sure Crop,	Concord,	Yes	366	
Bowker's One Ten Sure Crop,	Framingham,	Yes	532	
Bowker's Two Ten Farm and Garden,	Fall River,	Yes	229	7.69
Bowker's Two Ten Farm and Garden,	New Bedford,	Yes	266	
Bowker's Two Ten Farm and Garden,	Boston,	Yes	327	
Bowker's Two Ten Farm and Garden,	Bridgewater,	Yes	367	7.91
Bowker's Two Ten Farm and Garden,	Chelmsford,	Yes	441	
Bowker's Two Ten Farm and Garden,	Boston,	Yes	443	
Bowker's Two Ten Farm and Garden,	Framingham,	Yes	561	
Bowker's Two Ten Farm and Garden,	Natick,	Yes	590	5.34
Bowker's Two Ten Farm and Garden,	Springfield,	Yes	711	9.38
Bowker's Three Ten All Round Fertilizer,	Springfield,	Yes	136	8.55
Bowker's Three Ten All Round Fertilizer,	Fall River,	Yes	243	
Bowker's Three Ten All Round Fertilizer,	Bridgewater,	Yes	361	
Bowker's Three Ten All Round Fertilizer,	Boston,	Yes	442	
Bowker's Three Ten All Round Fertilizer,	Northampton,	Yes	638	8.53
Bowker's Three Ten All Round Fertilizer,	Northampton,	Yes	639	
Bowker's Three Ten All Round Fertilizer,	Springfield,	Yes	714	
Bowker's Four Ten Hill and Drill,	Springfield,	Yes	134	7.07
Bowker's Four Ten Hill and Drill,	Fall River,	Yes	232	
Bowker's Four Ten Hill and Drill,	New Bedford,	Yes	268	
Bowker's Four Ten Hill and Drill,	Boston,	Yes	340	
Bowker's Four Ten Hill and Drill,	Bridgewater,	Yes	369	7.58
Bowker's Four Ten Hill and Drill,	Boston,	Yes	444	
Bowker's Four Ten Hill and Drill,	Dighton,	Yes	485	
Bowker's Four Ten Hill and Drill,	Northampton,	Yes	637	
Bowker's Four Ten Hill and Drill,	Fitchburg,	Yes	673	
Bowker's Four Ten Hill and Drill,	Springfield,	Yes	712	10.97
Bowker's Four Ten Hill and Drill,	North Amherst,	Yes	723	
Stockbridge Five Eight General Crop,	Northampton,	Yes	642	7.45
Stockbridge Five Eight General Crop,	Natick,	Yes	588	
Stockbridge Five Eight General Crop,	Springfield,	Yes	713	
Stockbridge Five Eight General Crop,	New Bedford,	Yes	271	7.49
Stockbridge Five Eight General Crop,	Boston,	Yes	336	
Stockbridge Five Eight General Crop,	Boston,	Yes	445	
Stockbridge Five Eight General Crop,	Dighton,	Yes	479	
Bowker's Tobacco Grower, 1916,	Northampton,	Yes	636	7.30
Bowker's Tobacco Grower, 1916,	North Amherst,	Yes	720	
Bowker's High Nitrogen Mixture,	Arlington,	Yes	883	9.16
The E. D. Chittenden Co., Bridgeport, Conn.				
Chittenden's Veg. and Onion Grower without Potash,	Leominster,	Yes	186	14.13
Chittenden's Veg. and Onion Grower without Potash,	Charlton,	Yes	693	
Chittenden's Veg. and Onion Grower without Potash,	Oxford,	Yes	778	
Chittenden's Veg. and Onion Grower without Potash,	Saundersville,	Yes	802	
Chittenden's Comp. Tobacco and Onion Grower,	Sunderland,	Yes	158	17.31
Chittenden's Grass and Grain without Potash,	Oxford,	Yes	777	11.81
Chittenden's Grass and Grain without Potash,	Saundersville,	Yes	801	
Chittenden's Tobacco Special,	North Amherst,	Yes	424	5.46
Coe-Mortimer Co., 51 Chambers St., New York City.				
E. Frank Coe's XXV Ammo. Phosphate, 1916,	Pittsfield,	Yes	839	9.74
E. Frank Coe's H. G. Ammo. Superphos., 1916,	North Hadley,	Yes	85	7.08
E. Frank Coe's H. G. Ammo. Superphos., 1916,	North Hadley,	Yes	90	
E. Frank Coe's H. G. Ammo. Superphos., 1916,	North Hadley,	Yes	106	
E. Frank Coe's H. G. Ammo. Superphos., 1916,	Westfield,	Yes	137	
E. Frank Coe's H. G. Ammo. Superphos., 1916,	Holyoke,	Yes	141	
E. Frank Coe's H. G. Ammo. Superphos., 1916,	Concord,	Yes	364	9.17
E. Frank Coe's H. G. Ammo. Superphos., 1916,	South Amherst,	Yes	515	
E. Frank Coe's Original Ammo. Dissolved Phos., 1916,	Danversport,	Yes	510	9.11
E. Frank Coe's Original Ammo. Dissolved Phos., 1916,	Attleboro,	Yes	604	
E. Frank Coe's Original Ammo. Dissolved Phos., 1916,	Northborough,	Yes	759	9.18
E. Frank Coe's Prolific Crop Producer, 1916,	North Hadley,	Yes	103	10.10
E. Frank Coe's Prolific Crop Producer, 1916,	Danversport,	Yes	509	

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

Nitrogen in 100 Pounds.						Phosphoric Acid in 100 Pounds.						
				Total.					Total.		Available.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
.54	.15	.29	Passed	.98	.82	6.12	4.06	.92	11.10	11.00	10.18	10.00
1.12	.10	.60	Passed	1.82	1.65	5.52	5.66	1.35	12.53	11.00	11.18	10.00
1.16	.30	.35	Passed	1.81	1.65	5.42	4.91	1.53	11.86	11.00	10.33	10.00
1.18	.19	.52	Passed	1.89	1.65	6.40	4.69	2.30	13.39	11.00	11.09	10.00
.89	.20	.56	Passed	1.65	1.65	4.46	5.37	1.45	11.28	11.00	9.83	10.00
1.85	.16	.52	Passed	2.53	2.47	6.22	4.19	1.15	11.56	11.00	10.41	10.00
1.87	.19	.47	Passed	2.53	2.47	5.68	4.73	1.45	11.86	11.00	10.41	10.00
2.61	.27	.60	Passed	3.48	3.29	6.38	4.29	1.22	11.89	11.00	10.67	10.00
2.56	.28	.63	Passed	3.47	3.29	6.76	3.85	1.38	11.99	11.00	10.61	10.00
2.34	.26	.73	Passed	3.33	3.29	6.76	3.49	1.89	12.14	11.00	10.25	10.00
3.06	.20	.98	Passed	4.24	4.11	5.53	3.22	1.07	9.82	9.00	8.75	8.00
3.01	.43	.89	Passed	4.33	4.11	5.53	3.22	1.20	9.95	9.00	8.75	8.00
1.04	.12	2.80	Passed	3.96	4.11	1.44	3.49	.84	5.77	5.00	4.93	4.00
6.12	.13	1.95	Passed	8.20	8.23	4.59	1.97	.48	7.04	6.00	6.56	5.00
1.91	.17	.74	Passed	2.82	2.47	8.78	2.19	.48	11.45	11.00	10.97	10.00
2.51	.21	.82	Passed	3.54	3.29	8.32	1.60	.74	10.66	11.00	9.92	10.00
3.55	.54	.36	Passed	4.45	4.12	7.69	2.16	.69	10.54	11.00	9.85	10.00
2.79	.08	1.60	Passed	4.47	4.52	.77	3.02	4.16	7.95	4.00	3.79	3.00
.61	–	.25	Passed	.86	.82	6.12	4.72	.64	11.48	11.00	10.84	10.00
1.70	.48	.54	Passed	2.72	2.47	6.15	4.62	1.12	11.89	11.00	10.77	10.00
1.82	.32	.49	Passed	2.63	2.47	4.97	5.03	1.81	11.81	11.00	10.00	10.00
1.08	.14	.56	Passed	1.78	1.65	5.10	5.11	1.68	11.89	11.00	10.21	10.00
.95	.39	.46	Passed	1.80	1.65	5.13	4.85	1.30	11.28	11.00	9.98	10.00
2.44	.30	.55	Passed	3.29	3.29	6.38	4.06	1.40	11.84	11.00	10.44	10.00

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
Coe-Mortimer Co. — Concluded.				
E. Frank Coe's Prolific Crop Producer, 1916,	Easthampton,	Yes	691	8.22
E. Frank Coe's Prolific Crop Producer, 1916,	Northborough,	Yes	749	
E. Frank Coe's Excelsior Potato Fertilizer, 1916,	North Amherst,	Yes	75	9.75
E. Frank Coe's Excelsior Potato Fertilizer, 1916,	North Amherst,	Yes	154	
E. Frank Coe's Excelsior Potato Fertilizer, 1916,	Taunton,	Yes	487	
E. Frank Coe's Top Dressing Manure,	North Hadley,	Yes	97	11.38
Morcoe Top Dresser without Potash,	Medway,	Yes	877	9.03
E. Frank Coe's Conn. Wrapper Grower without Potash,	North Hadley,	Yes	80	6.24
E. Frank Coe's Conn. Wrapper Grower without Potash,	North Hadley,	Yes	86	
E. Frank Coe's Conn. Wrapper Grower without Potash,	Hatfield,	Yes	296	
E. Frank Coe's Conn. Wrapper Grower without Potash,	Easthampton,	Yes	684	6.39
E. Frank Coe's Tobacco Special,	North Hadley,	Yes	87	6.13
E. Frank Coe's Tobacco Special,	North Hadley,	Yes	114	
E. Frank Coe's Tobacco Special,	North Hadley,	Yes	115	
John C. Dow & Co., Boston, Mass.				
Dow's Garden Fertilizer,	Northborough,	Yes	738	6.42
Essex Fertilizer Co., Boston, Mass.				
Essex Fish Fertilizer 3-10,	New Bedford,	Yes	245	9.47
Essex Fish Fertilizer 3-10,	Webster,	Yes	678	
Essex Fish Fertilizer 3-10,	Spencer,	Yes	703	10.61
Essex Fish Fertilizer 3-10,	Gardner,	Yes	790	
Essex Market Garden and Potato Manure 3½-10,	New Bedford,	No	246	9.50
Essex Market Garden and Potato Manure 3½-10,	Webster,	Yes	692	8.91
Essex Market Garden and Potato Manure 3½-10,	Manufacturer's sample,	Yes	921	10.17
Essex Market Garden and Potato Manure 3½-10,	West Acton,	No	809	8.23
Essex Potato Phosphate 4-10,	New Bedford,	No	251	8.31
Essex Potato Phosphate 4-10,	Leominster,	Yes	674	8.22
Essex Potato Phosphate 4-10,	Webster,	Yes	695	9.57
Essex High Grade 5-8,	Manufacturer's sample,	No	922	7.47
Essex Grain, Grass and Potato Fertilizer 1-12,	Taunton,	Yes	490	8.84
Essex Grain, Grass and Potato Fertilizer 1-12,	Leominster,	Yes	668	
Essex Grain, Grass and Potato Fertilizer 1-12,	Webster,	Yes	696	
Essex Grain, Grass and Potato Fertilizer 1-12,	Spencer,	Yes	702	
Essex Grain, Grass and Potato Fertilizer 1-12,	West Acton,	Yes	807	
John Glennie, North Andover, Mass.				
Superphosphate,	North Andover,	Yes	923	4.18
Thomas Hersom & Co., New Bedford, Mass.				
Hersom's Neverfail,	New Bedford,	Yes	263	6.58
A. W. Higgins, Westfield, Mass.				
Five-Twelve Fertilizer,	Sunderland,	Yes	427	5.33
International Agricultural Corp., Buffalo, N. Y. (Buffalo Fertilizer Works Branch).				
Buffalo Farmer's Choice,	Medway,	Yes	402	7.81
Buffalo Farmer's Choice,	Lee,	Yes	849	
Buffalo New England Special,	North Hadley,	Yes	109	7.83
Buffalo New England Special,	Marlborough,	Yes	763	
Buffalo New England Special,	Belchertown,	Yes	824	
Buffalo New England Special,	Pittsfield,	Yes	846	
Buffalo Onion, Vegetable and Potato Fertilizer,	North Amherst,	Yes	35	9.23
Buffalo Onion, Vegetable and Potato Fertilizer,	South Deerfield,	Yes	175	8.63
Buffalo Onion, Vegetable and Potato Fertilizer,	North Hadley,	Yes	92	9.60
Buffalo Onion, Vegetable and Potato Fertilizer,	North Hadley,	Yes	107	
Buffalo Onion, Vegetable and Potato Fertilizer,	Sunderland,	Yes	145	
Buffalo Onion, Vegetable and Potato Fertilizer,	Sunderland,	Yes	300	
Buffalo Onion, Vegetable and Potato Fertilizer,	North Hadley,	Yes	373	
Buffalo Onion, Vegetable and Potato Fertilizer,	North Hadley,	Yes	429	
Buffalo Tobacco Grower,	North Amherst,	Yes	36	9.21

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

NITROGEN IN 100 POUNDS.						PHOSPHORIC ACID IN 100 POUNDS.						
				TOTAL.					TOTAL.		AVAILABLE.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
2.57	.29	.60	Passed	3.46	3.29	6.35	4.13	1.15	11.63	11.00	10.48	10.00
3.20	.30	.77	Passed	4.27	4.11	6.70	4.02	1.53	12.25	11.00	10.72	10.00
5.47	.41	.66	Passed	6.54	6.58	5.36	3.24	1.02	9.62	9.00	8.60	8.00
6.52	-	2.04	Passed	8.56	8.23	4.25	1.36	.46	6.07	6.00	5.61	5.00
1.04	.59	3.34	Passed	4.97	4.53	.96	3.17	.10	4.23	4.00	4.13	3.00
1.05	.17	3.43	Passed	4.65	4.53	1.56	3.06	.20	4.82	4.00	4.62	3.00
1.02	.08	3.09	Passed	4.19	4.11	.83	3.74	.69	5.26	5 00	4.57	4.00
1.78	.41	2.57	Passed	4.76	3.70	1.53	11.10	6.86	19.49	15.00	12.63	12.00
1.22	.55	.62	Passed	2.39	2.46	7.50	2.63	.94	11.07	11.00	10.13	10.00
1.49	.67	.74	Passed	2.90	2.46	7.08	2.61	.87	10.56	11.00	9.69	10.00
1.39	.34	.68	Passed	2.41	2.87	4.85	4.00	3.01	11.86	11.00	8.85	10.00
1.39	.62	.68	Passed	2.69	2.87	6.51	3.67	1.89	12.07	11.00	10.18	10.00
1.56	.84	.97	Passed	3.37	2.88	7.25	3.47	.66	11.38	11.00	10.72	10.00
1.32	.64	.68	Passed	2.64	2.87	5.49	3.62	2.45	11.56	11.00	9.11	10.00
.94	.52	.64	Passed	2.10	3.29	5.74	4.72	1.89	12.35	11.00	10.46	10.00
1.42	.88	.96	Passed	3.26	3.29	7.27	3.31	1.05	11.63	11.00	10.58	10.00
2.34	.56	.75	Passed	3.65	3.29	7.63	2.60	.89	11.12	11.00	10.23	10.00
1.89	.67	.87	Passed	3.43	4.11	5.27	3.20	.77	9.24	9.00	8.47	8.00
.19	.26	.37	Inferior	.82	.82	8.74	4.07	1.63	14.44	13.00	12.81	12.00
.29	1.79	1.74	Passed	3.82	3.75	1.40	11.20	9.07	21.67	13.00	12.60	10.00
2.13	.70	2.05	Passed	4.88	3.00	6.57	.70	3.85	11.12	10.00	7.27	10.00
.12	1.12	2.99	Passed	4.23	4.12	5.29	4.76	4.77	14.82	12.00	10.05	-
.71	-	.52	Passed	1.23	.80	5.14	5.17	1.43	11.74	11.00	10.31	10.00
.94	.22	.68	Passed	1.84	1.60	6.19	5.06	1.15	12.40	11.00	11.25	10.00
1.43	.32	.75	Passed	2.50	2.50	5.04	4.96	2.34	12.34	11.00	10.00	10.00
1.51	.29	.99	Passed	2.79	2.50	7.14	3.14	2.45	12.73	11.00	10.28	10.00
1.39	.20	.91	Passed	2.50	2.50	6.67	4.37	1.79	12.83	11.00	11.04	10.00
2.36	.13	1.67	Passed	4.16	4.12	2.59	1.90	1.03	5.52	5.00	4.49	4.00

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
International Agricultural Corp. — Concluded.				
Buffalo Tobacco Grower,	North Hadley,	Yes	88	9.60
Buffalo Tobacco Grower,	North Hadley,	Yes	91	
Buffalo Tobacco Grower,	North Hadley,	Yes	104	
Buffalo Tobacco Grower,	Sunderland,	Yes	152	
Buffalo Tobacco Grower,	Hatfield,	Yes	293	
Buffalo Tobacco Grower,	Sunderland,	Yes	299	
Buffalo Tobacco Grower,	Hadley,	Yes	430	11.61
Buffalo Tobacco Grower,	Westfield,	Yes	917	10.91
Buffalo Top Dresser,	North Hadley,	No	96	8.28
Buffalo Top Dresser,	North Hadley,	No	147	
Buffalo Top Dresser,	Sunderland,	No	108	
Buffalo Top Dresser,	Hatfield,	Yes	892	10.39
Buffalo Garden Truck,	South Lincoln,	Yes	262	8.42
Buffalo Garden Truck,	Framingham,	Yes	586	10.30
Buffalo Garden Truck,	Marlborough,	Yes	765	
Buffalo High Grade Manure,	Lee,	Yes	847	8.61
Buffalo Ammoniated Phosphate,	North Middleborough,	Yes	919	9.35
Buffalo Standard Fertilizer,	North Hadley,	Yes	419	7.11
Listers Agricultural Chemical Works, Newark, N. J.				
Listers Plant Food,	Haverhill,	Yes	918	5.33
Listers Plant Food,	North Leominster,	Yes	927	9.01
Listers Crescent Ammoniated Phosphate, 1916,	Webster,	Yes	698	9.24
Listers Excelsior Guano, 1916,	Hatfield,	Yes	294	11.43
Listers Excelsior Guano, 1916,	North Leominster,	Yes	926	10.46
Listers Special Potato Fertilizer,	South Deerfield,	Yes	167	10.14
Listers Special Potato Fertilizer,	North Hanover,	Yes	633	
Listers Celebrated Onion Fertilizer,	Hatfield,	Yes	287	11.27
Listers Special Tobacco Fertilizer,	Conway,	Yes	891	9.88
Listers Celebrated Tobacco Fertilizer,	Hatfield,	Yes	292	6.74
Lowell Fertilizer Co., Boston, Mass.				
Lowell Empress Brand 1½–10,	Fall River,	Yes	216	10.78
Lowell Empress Brand 1½–10,	Taunton,	Yes	252	
Lowell Empress Brand 1½–10,	Webster,	Yes	679	
Lowell Empress Brand 1½–10,	Spencer,	No	704	8.24
Lowell Empress Brand 1½–10,	Southbridge,	No	726	
Lowell Empress Brand 1½–10,	North Grafton,	No	735	
Lowell Empress Brand 1½–10,	Littleton,	No	797	
Lowell Bone Fertilizer for Corn, Grain and Grass 2½–10,	Concord,	No	355	9.64
Lowell Bone Fertilizer for Corn, Grain and Grass 2½–10,	Lowell,	No	457	
Lowell Bone Fertilizer for Corn, Grain and Grass 2½–10,	Woburn,	No	474	
Lowell Potato Manure 3–10,	East Longmeadow,	Yes	131	10.43
Lowell Potato Manure 3–10,	Taunton,	Yes	261	
Lowell Potato Manure 3–10,	Norwood,	Yes	507	
Lowell Potato Manure 3–10,	Webster,	Yes	700	8.74
Lowell Potato Manure 3–10,	Spencer,	Yes	701	
Lowell Potato Manure 3–10,	Southbridge,	Yes	729	
Lowell Animal Brand 3½–10,	East Longmeadow,	Yes	127	7.44
Lowell Animal Brand 3½–10,	Fall River,	Yes	222	
Lowell Animal Brand 3½–10,	Taunton,	Yes	254	
Lowell Animal Brand 3½–10,	Boston,	Yes	333	
Lowell Animal Brand 3½–10,	Woburn,	No	473	8.61
Lowell Animal Brand 3½–10,	Brockton,	No	512	
Lowell Animal Brand 3½–10,	South Amherst,	No	519	
Lowell Potato Phosphate 4–10,	Fall River,	Yes	223	9.01
Lowell Potato Phosphate 4–10,	Taunton,	Yes	253	
Lowell Potato Phosphate 4–10,	Concord,	Yes	365	
Lowell Potato Phosphate 4–10,	Woburn,	Yes	472	
Lowell Potato Phosphate 4–10,	Waltham,	Yes	265	10.94
Lowell High Grade Fertilizer 5–8,	Hatfield,	Yes	283	6.60
Lowell High Grade Fertilizer 5–8,	Norwood,	Yes	508	

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

NITROGEN IN 100 POUNDS.						PHOSPHORIC ACID IN 100 POUNDS.						
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	TOTAL.		Water Soluble.	Reverted.	Insoluble.	TOTAL.		AVAILABLE.	
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.
2.41	.18	1.54	Passed	4.13	4.10	2.30	3.09	.89	6.28	5.00	5.39	4.00
2.34	.09	1.67	Passed	4.10	4.10	.73	3.76	1.07	5.56	5.00	4.49	4.00
2.51	.08	1.68	Passed	4.27	4.10	1.72	3.05	.94	5.71	5.00	4.77	4.00
3.81	.48	.92	Passed	5.21	5.80	2.97	3.84	2.27	9.08	7.00	6.81	6.00
4.31	.30	1.15	Passed	5.76	5.80	2.58	3.75	1.66	7.99	7.00	6.33	6.00
1.85	.24	1.22	Passed	3.31	3.30	7.65	3.83	1.76	13.24	11.00	11.48	10.00
2.06	.32	1.05	Passed	3.43	3.30	6.19	3.50	1.79	11.48	11.00	9.69	10.00
2.19	.41	.88	Passed	3.48	3.30	5.17	3.36	.71	9.24	9.00	8.53	8.00
1.16	.08	.44	Passed	1.68	1.20	7.46	4.41	2.42	14.29	13.00	11.87	12.00
2.20	.13	.98	Passed	3.31	3.30	7.14	3.73	2.73	13.60	11.00	10.87	10.00
.49	.05	.26	Passed	.80	.82	5.61	4.14	.99	10.74	11.00	9.75	10.00
.84	.10	.39	Passed	1.33	.82	5.84	5.49	1.53	12.86	11.00	11.33	10.00
.85	.21	.59	Passed	1.65	1.65	4.31	5.51	1.79	11.61	11.00	9.82	10.00
1.43	.54	.89	Passed	2.86	2.47	7.44	3.66	2.55	13.65	11.00	11.10	10.00
1.87	.31	.57	Passed	2.75	2.47	5.71	4.31	1.33	11.35	11.00	10.02	10.00
3.29	.38	.73	Passed	4.40	4.11	9.72	1.31	.99	12.02	11.00	11.03	10.00
3.34	.42	.64	Passed	4.40	4.11	9.44	2.33	.99	12.76	11.00	11.77	10.00
1.30	.32	.40	Passed	2.02	2.06	5.36	4.87	.87	11.10	11.00	10.23	10.00
1.15	.12	3.26	Passed	4.53	4.53	1.89	1.86	.26	4.01	4.00	3.75	3.00
.47	.30	.32	Passed	1.09	1.23	5.68	4.70	1.66	12.04	11.00	10.38	10.00
.40	.30	.30	Passed	1.00	1.23	5.87	3.91	1.96	11.74	11.00	9.78	10.00
.88	.38	.46	Inferior	1.72	2.00	6.06	3.76	2.68	12.50	11.00	9.82	10.00
1.29	.55	.60	Passed	2.44	2.46	6.95	3.61	.89	11.45	11.00	10.56	10.00
1.25	.62	.67	Passed	2.54	2.46	7.65	3.27	.46	11.38	11.00	10.92	10.00
1.47	.62	.76	Passed	2.85	2.87	6.22	3.88	1.56	11.66	11.00	10.10	10.00
1.30	.57	.73	Passed	2.60	2.87	6.00	3.83	1.60	11.43	11.00	9.83	10.00
1.71	.72	.97	Passed	3.40	3.28	7.50	2.93	.89	11.32	11.00	10.43	10.00
1.94	.38	.94	Passed	3.26	3.28	9.18	.70	1.94	11.82	11.00	9.88	10.00
2.15	.65	1.01	Passed	3.81	4.00	5.74	3.16	.87	9.77	9.00	8.90	8.00

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
Mapes Formula & Peruvian Guano Co., New York City.				
Mapes 5 Per Cent Ammonia Special,	Hatfield,	Yes	291	10.68
Mapes 5 Per Cent Ammonia Special,	Boston,	Yes	493	
Jas. E. McGovern, Andover, Mass.				
Andover Animal Fertilizer,	Andover,	Yes	584	6.70
National Fertilizer Co., 92 State St., Boston, Mass.				
National Nitrogen Phosphate Mixture, No. 2,	South Deerfield,	Yes	579	8.64
National Nitrogen Phosphate Mixture, No. 3,	Bradstreet,	Yes	51	9.21
National Nitrogen Phosphate Mixture, No. 3,	West Springfield,	Yes	142	8.19
National Nitrogen Phosphate Mixture, No. 3,	Hatfield,	Yes	285	
National Nitrogen Phosphate Mixture, No. 3,	Hatfield,	Yes	289	
National Nitrogen Phosphate Mixture, No. 3,	Framingham,	Yes	538	
National Nitrogen Phosphate Mixture, No. 3,	Easthampton,	Yes	686	
National Nitrogen Phosphate Mixture, No. 4,	Bradstreet,	Yes	54	8.94
National Nitrogen Phosphate Mixture, No. 4,	Sunderland,	Yes	205	8.38
National Nitrogen Phosphate Mixture, No. 4,	Hatfield,	Yes	297	
National Nitrogen Phosphate Mixture, No. 4,	Hadley,	Yes	345	
National Nitrogen Phosphate Mixture, No. 4,	Hadley,	Yes	354	
National Nitrogen Phosphate Mixture, No. 4,	North Hadley,	Yes	374	
National Nitrogen Phosphate Mixture, No. 4,	North Amherst,	Yes	648	8.59
National Nitrogen Phosphate Mixture, No. 4,	Easthampton,	Yes	689	
National Nitrogen Phosphate Mixture, No. 4,	Sturbridge,	Yes	709	
National Nitrogen Phosphate Mixture, No. 4,	Northborough,	Yes	750	
National Nitrogen Phosphate Mixture, No. 5,	Bradstreet,	Yes	55	8.27
National Nitrogen Phosphate Mixture, No. 5,	Whately,	Yes	179	7.77
National Nitrogen Phosphate Mixture, No. 5,	Hatfield,	Yes	286	
National Nitrogen Phosphate Mixture, No. 5,	Easthampton,	Yes	685	
National Nitrogen Phosphate Mixture, No. 5,	Sturbridge,	Yes	727	
National Nitrogen Phosphate Mixture, No. 6,	Sunderland,	Yes	420	10.08
National Nitrogen Phosphate Mixture, No. 6,	Bradstreet,	Yes	577	
National Tobacco Special without Potash,	South Deerfield,	Yes	166	5.79
National Tobacco Special without Potash,	Sunderland,	Yes	201	
National Tobacco Special without Potash,	Hadley,	Yes	352	7.88
National Tobacco Special without Potash,	North Hadley,	Yes	380	
National Tobacco Special without Potash,	Easthampton,	Yes	437	
National Tobacco Manure,	North Hadley,	Yes	105	6.82
National Tobacco Manure,	Hadley,	Yes	344	
National Tobacco Manure,	Hadley,	Yes	353	
National Tobacco Manure,	Easthampton,	Yes	688	7.82
New England Fert. Co., 40A N. Market St., Boston, Mass.				
New England Standard Phosphate 1–12,	Middleborough,	Yes	864	6.90
New England Corn Phosphate 2½–10,	Brockton,	Yes	552	9.75
New England Corn Phosphate 2½–10,	Taunton,	Yes	643	
New England Corn Phosphate 2½–10,	Middleborough,	No	867	10.91
New England Superphosphate 3½–10,	Taunton,	Yes	651	8.98
New England Superphosphate 3½–10,	Middleborough,	Yes	865	
New England H. G. Potato Fertilizer 4–10,	Brockton,	No	503	10.20
New England H. G. Potato Fertilizer 4–10,	Amherst,	No	521	
New England H. G. Potato Fertilizer 4–10,	Taunton,	No	630	
New England High Grade Special,	Sunderland,	Yes	915	6.92
New England Special Tobacco Manure,	Feeding Hills,	No	905	4.76
New England Potato Fertilizer 3–10,	Brockton,	No	506	8.52
Olds & Whipple, Hartford, Conn.				
Olds & Whipple's Tobacco Special,	Hatfield,	Yes	284	6.51
Olds & Whipple's Tobacco Special,	Hadley,	Yes	347	
Olds & Whipple's Special High Grade Tobacco Starter,	Manufacturer's sample,	Yes	924	4.82
Olds & Whipple's Spec. Onion, Corn and Potato Fert.,	Hadley,	Yes	48	13.19
Olds & Whipple's Spec. Onion, Corn and Potato Fert.,	North Hadley,	Yes	83	9.11
Olds & Whipple's Spec. Onion, Corn and Potato Fert.,	Hadley,	Yes	349	

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

Nitrogen in 100 Pounds.						Phosphoric Acid in 100 Pounds.						
				Total.					Total.		Available.	
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	Found.	Guaranteed	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.
3.54	.04	.80	Passed	4.38	4.12	2.70	5.72	2.68	11.10	10.00	8.42	8.00
.40	2.02	3.19	Passed	5.61	4.00	60	10.24	6.25	17.09	15.00	10.84	10.00
1.12	.17	.46	Passed	1.75	1.65	4.95	4.79	1.61	11.35	11.00	9.74	10.00
1.95	.38	.41	Passed	2.74	2.47	5.18	5.33	1.84	12.35	11.00	10.51	10.00
1.85	.14	.61	Passed	2.60	2.47	6.00	4.38	1.48	11.86	11.00	10.38	10.00
2.50	.40	.51	Passed	3.41	3.25	6 90	3.25	2.35	12.50	11.00	10.15	10.00
2.53	40	.60	Passed	3.53	3 29	6.63	3.68	1.30	11.61	11.00	10.31	10.00
2.30	.16	.85	Passed	3.31	3.29	7.33	2.95	1.02	11.30	11.00	10.28	10.00
3.17	.42	.67	Passed	4.26	4.11	5.52	3.00	1.33	9.85	9.00	8.52	8.00
3.09	.07	1.01	Passed	4.17	4.11	5.93	2.72	.89	9.54	9.00	8.65	8.00
3.16	.27	.77	Passed	4.20	4.11	6.70	3.20	1.40	11.30	11.00	9.90	10.00
.94	.41	3.33	Passed	4.68	4.53	.90	3.39	.31	4.60	4.00	4.29	3.00
1.05	.34	3.36	Passed	4.75	4.53	.57	3.81	.54	4.92	4.00	4.38	3.00
1.22	.44	3.09	Passed	4.75	4.11	1.34	4.22	.05	5.61	5.00	5.56	4.00
1.06	.48	3.08	Passed	4.62	4.11	.68	4.83	.10	5.61	5.00	5.51	4.00
.18	.28	.42	Passed	.88	.82	10.27	3.40	.87	14.54	13.00	13.67	12.00
1.20	.50	.49	Inferior	2.19	2.06	6.06	4.10	1.68	11.84	11.00	10.16	10.00
1.16	.22	.57	Passed	1.95	2.05	7.56	2.80	.64	11.00	11.00	10.36	10.00
1.43	.59	.78	Passed	2.80	2.87	7.76	2.42	.82	11.00	11.00	10.18	10.00
1.67	.60	.83	Passed	3.10	3.29	7.18	3.26	.89	11.33	11.00	10.44	10.00
2.67	.43	.82	Passed	3.92	4.10	5.55	3.36	.89	9.80	9.00	8.91	8.00
1.64	.73	1.49	Passed	3.86	4.12	2.46	3.99	2.35	8.80	7.00	6.45	6.00
1.26	.51	.63	Passed	2.40	2.46	7.14	2.92	.66	10.72	11.00	10.06	10.00
1.02	.61	3.51	Passed	5.14	4.11	1.50	1.86	.08	3.44	3.00	3.36	3.00
3.46	.56	6.06	Passed	10.08	9.06	1.25	2.83	.87	4.95	3.00	4.08	3.00
1.30	.62	.93	Passed	2.85	2.45	5.78	3.47	2.41	11.66	8.00	9.25	8 00
1.39	.55	1.08	Passed	3.02	2.45	5.83	3.66	1.48	10.97	8.00	9.49	8.00

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
Parmenter & Polsey Fertilizer Co., Boston, Mass.				
P. & P. Corn and Grain Fertilizer 1-12,	Northborough,	Yes	752	7.51
P. & P. Potato Fertilizer 2½-10,	Millis,	Yes	621	6.84
P. & P. Potato Fertilizer 2½-10,	Peabody,	Yes	655	
P. & P. Potato Fertilizer 2½-10,	Littleton,	Yes	789	
P. & P. Plymouth Rock Brand 3½-10,	Peabody,	Yes	654	8.35
P. & P. Plymouth Rock Brand 3½-10,	Northborough,	Yes	755	
P. & P. Plymouth Rock Brand 3½-10,	Littleton,	Yes	788	
P. & P. Potato Phosphate 4-10,	Belchertown,	No	901	10.52
P. & P. High Grade Fertilizer 5-8,	Northborough,	Yes	757	8.04
Reading Bone Fertilizer Co., Reading, Pa.				
Reading All Crop Special,	Bernardston,	Yes	913	5.26
Rogers & Hubbard Co., Middletown, Conn.				
Rogers & Hubbard's Complete Phosphate,	East Milton,	Yes	560	12.79
Rogers & Hubbard's Complete Phosphate,	North Hanover,	Yes	628	
Rogers & Hubbard's Complete Phosphate,	East Taunton,	Yes	652	
Rogers & Hubbard's Complete Phosphate, 1916,	Plymouth,	Yes	620	5.08
Rogers & Hubbard's Complete Phosphate,	Enfield,	Yes	828	8.05
Rogers & Hubbard's All Round Phosphate,	West Acton,	Yes	808	6.92
Rogers & Hubbard's Potato Phosphate,	Norwood,	Yes	500	12.60
Rogers & Hubbard's Potato Phosphate,	East Milton,	Yes	541	
Rogers & Hubbard's Potato Phosphate,	Hanover,	Yes	627	
Rogers & Hubbard's Potato Phosphate,	East Taunton,	Yes	650	
Rogers & Hubbard's Potato Phosphate,	Greenfield,	Yes	813	15.03
Rogers & Hubbard's All Soils-All Crops Phosphate,	Northampton,	Yes	148	11.85
Rogers & Hubbard's All Soils-All Crops Phosphate,	Sunderland,	Yes	202	
Rogers & Hubbard's All Soils-All Crops Phosphate,	West Acton,	Yes	806	12.30
Rogers & Hubbard's Climax Tobacco Brand,	Florence,	Yes	920	4.90
Rogers & Hubbard's Bone Base Sol. Tobacco Manure,	Whately,	Yes	181	8.95
Rogers & Hubbard's Bone Base Sol. Tobacco Manure,	North Hadley,	Yes	417	
Rogers & Hubbard's Bone Base Sol. Tobacco Manure, 1917,	Plymouth,	No	618	9.05
Hubbard's Bone Base Sol. Corn and General Crops Manure,	North Hadley,	Yes	376	7.54
Hubbard's Bone Base Sol. Corn and General Crops Manure,	North Hadley,	Yes	377	
Hubbard's Bone Base Sol. Corn and General Crops Manure,	Hadley,	Yes	381	
Hubbard's Bone Base Sol. Corn and General Crops Manure,	East Milton,	Yes	558	9.84
Hubbard's Bone Base Sol. Corn and General Crops Manure,	East Taunton,	Yes	631	
Hubbard's Bone Base Sol. Corn and General Crops Manure,	Plymouth,	Yes	634	
Hubbard's Bone Base Sol. Corn and General Crops Manure,	Gardner,	Yes	791	
Hubbard's Bone Base Oats and Top Dressing,	Plymouth,	Yes	625	6.00
Hubbard's Bone Base Oats and Top Dressing,	Hadley,	Yes	854	
Hubbard's Bone Base Sol. Corn and General Crops Manure,	Amherst,	Yes	110	9.97
Ross Bros. Co., Worcester, Mass.				
Ross Bros. Home Garden Fertilizer,	Worcester,	Yes	187	10.03
Ross Bros. Home Garden Fertilizer,	Northbridge,	Yes	804	7.04
F. S. Royster Guano Co., Baltimore, Md.				
Royster's Corn and Oats Fertilizer,	Adams,	Yes	850	3.94
Royster's Penguin Ammoniated Superphosphate,	Pittsfield,	Yes	831	4.31
Royster's Penguin Ammoniated Superphosphate,	Hatfield,	Yes	853	
Royster's Innovation Ammo. Superphosphate,	Webster,	Yes	895	1.23
Royster's Landmark Ammo. Superphosphate,	South Deerfield,	Yes	178	3.31
Royster's Landmark Ammo. Superphosphate,	Westfield,	Yes	907	
Royster's C. B. Fish Mixture,	Adams,	Yes	851	3.26
Royster's Perfecto Tobacco Formula,	South Deerfield,	No	163	5.18
Royster's Perfecto Tobacco Formula,	Deerfield,	No	817	
Royster's Perfecto Tobacco Formula,	Westfield,	No	857	
Sanderson Fertilizer & Chemical Co., New Haven, Conn.				
Sanderson's Special without Potash,	New Bedford,	Yes	247	10.47
Sanderson's Special without Potash,	Dighton,	Yes	481	

Fertilizers furnishing Nitrogen and Phosphoric Acid — Continued.

NITROGEN IN 100 POUNDS.						PHOSPHORIC ACID IN 100 POUNDS.						
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	TOTAL. Found.	TOTAL. Guaranteed.	Water Soluble.	Reverted.	Insoluble.	TOTAL. Found.	TOTAL. Guaranteed.	AVAILABLE. Found.	AVAILABLE. Guaranteed.
.21	.28	.43	Passed	.92	.82	7.84	4.49	.71	13.04	13.00	12.33	12.00
.68	.74	.68	Passed	2.10	2.06	6.12	3.61	1.68	11.41	11.00	9.73	10.00
1.27	.64	.95	Passed	2.86	2.87	6.98	3.03	1.22	11.23	11.00	10.01	10.00
1.43	.80	.73	Passed	2.96	3.29	7.65	3.58	.48	11.71	11.00	11.23	10.00
2.34	1.04	1.06	Passed	4.44	4.10	5.80	2.57	1.38	9.75	9.00	8.37	8.00
.77	.48	.43	Passed	1.68	1.64	6.76	4.42	2.14	13.32	11.00	11.18	10.00
.70	.11	.34	Passed	1.15	1.00	1.72	5.45	2.42	9.59	8.00	7.17	7.50
.40	.38	.66	Passed	1.44	1.00	2.93	5.29	4.23	12.45	11.00	8.22	9.00
.44	.22	.35	Passed	1.01	1.00	4.15	3.02	2.50	9.67	8.00	7.17	7.50
1.04	.22	.39	Passed	1.65	1.65	3.16	3.09	2.81	9.06	7.50	6.25	7.00
1.19	.23	.73	Passed	2.15	2.00	7.08	6.06	5.20	18.34	15.00	13.14	14.00
1.32	.21	.60	Passed	2.13	2.00	6.03	6.45	4.87	17.35	15.00	12.48	14.00
2.89	.24	.41	Passed	3.54	3.30	5.77	6.29	2.35	14.41	13.50	12.06	12.50
2.32	.50	.49	Passed	3.31	3.30	5.42	5.66	3.39	14.47	13.50	11.08	12.50
1.32	.36	2.74	Passed	4.42	4.12	.13	2.83	3.11	6.07	4.00	2.96	3.00
3.29	.94	1.01	Passed	5.24	5.00	2.32	7.52	4.01	13.85	13.00	9.84	10.00
3.36	.46	.87	Passed	4.69	5.00	.17	8.45	5.79	14.41	13.00	8.62	10.00
1.02	.51	.94	Passed	2.47	2.50	3.48	5.62	5.31	14.41	12.00	9.10	10.00
1.08	.54	.88	Passed	2.50	2.50	2.93	5.92	6.02	14.87	12.00	8.85	10.00
4.79	.47	.67	Passed	5.93	6.00	–	6.33	7.37	13.70	12.00	6.33	6.00
1.09	.64	.84	Passed	2.57	2.50	3.23	5.56	5.14	13.93	12.00	8.79	10.00
.50	.29	.92	Passed	1.71	1.65	5.33	2.47	1.15	8.95	8.50	7.80	8.00
.63	.30	.88	Passed	1.81	1.65	5.42	2.21	.87	8.50	8.50	7.63	8.00
.53	.08	.40	Passed	1.01	.82	5.42	3.03	.84	9.29	8.50	8.45	8.00
1.06	.50	.64	Passed	2.20	1.65	7.08	3.68	.92	11.68	10.50	10.76	10.00
1.16	.25	1.23	Passed	2.64	2.47	5.68	2.63	1.10	9.41	8.50	8.31	8.00
1.77	1.02	1.09	Passed	3.88	3.29	8.16	2.33	.99	11.48	10.50	10.49	10.00
.85	.42	.54	Passed	1.81	1.65	6.80	2.08	1.07	9.95	8.50	8.88	8.00
1.18	.14	2.58	Passed	3.90	4.11	2.49	1.84	1.10	5.43	4.50	4.33	4.00
.75	.78	1.00	Passed	2.53	2.47	6.06	4.63	1.91	12.60	11.00	10.69	10.00

Fertilizers furnishing Nitrogen and Phosphoric Acid — Concluded.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
Sanderson Fertilizer & Chemical Co. — Concluded.				
Sanderson's High Grade Ammoniated Phosphate,	Deerfield,	Yes	431	12.38
Sanderson's High Grade Ammoniated Phosphate,	Dighton,	Yes	484	
Sanderson's High Grade Ammoniated Phosphate,	South Deerfield,	Yes	580	
Sanderson's High Grade Ammoniated Phosphate,	Bridgewater,	Yes	644	
Sanderson's High Grade Ammoniated Phosphate,	East Taunton,	Yes	645	
Sanderson's Double Strength Ammonia Mixture,	Dighton,	No	483	10.77
Sanderson's Phosphate without Potash,	Fall River,	Yes	217	9.01
Sanderson's Phosphate without Potash,	Dighton,	Yes	453	
Sanderson's Phosphate without Potash,	East Taunton,	Yes	629	
Sanderson's Phosphate without Potash,	Bridgewater,	Yes	656	
M. L. Shoemaker & Co. Ltd., Philadelphia, Pa.				
Swift-Sure Superphosphate,	Hatfield,	Yes	295	7.68
Swift-Sure Superphosphate,	Feeding Hills,	Yes	324	
Springfield Rendering Co., Springfield, Mass.				
Animal Fertilizer Complete Manure for All Crops,	Springfield,	Yes	575	7.03
Special Potato, Onion and Vegetable Fertilizer,	North Amherst,	Yes	428	6.78
Special Potato, Onion and Vegetable Fertilizer,	Springfield,	Yes	576	
Market Garden Grower and Top Dresser,	North Amherst,	Yes	425	5.56
Market Garden Grower and Top Dresser,	Springfield,	Yes	574	
20th Century Specialty Co., 317 Adams St., Dorchester, Mass.				
Scientific 12L Fertilizer,	Dorchester,	Yes	653	2.46
Virginia-Carolina Chemical Co., New York City.				
V. C. C. Co. Indian Brand for Tobacco without Potash,	Hatfield,	Yes	889	4.75
Whitman & Pratt Rendering Co., Boston, Mass.				
Whitman & Pratt's 1-10 Brand,	Billerica,	Yes	465	7.98
Whitman & Pratt's 1-10 Brand,	Woburn,	Yes	467	
Whitman & Pratt's 1-10 Brand,	Hadley,	Yes	690	
Whitman & Pratt's 1-10 Brand,	Northborough,	Yes	753	
Whitman & Pratt's 3-10 Brand,	Billerica,	Yes	464	9.73
Whitman & Pratt's 3-10 Brand,	Woburn,	Yes	471	
Whitman & Pratt's 3-10 Brand,	Northborough,	Yes	743	
Whitman & Pratt's 4-10 Brand,	Chelmsford,	Yes	447	9.72
Whitman & Pratt's 4-10 Brand,	Bridgewater,	Yes	608	
Whitman & Pratt's 4-10 Brand,	Northborough,	Yes	754	
Whitman & Pratt's 5-8 Brand,	Northborough,	Yes	744	7.60
Wilcox Fertilizer Works, Mystic, Conn.				
Wilcox Grass Fertilizer,	Fall River,	Yes	242	7.90
Wilcox Corn Special,	Monson,	Yes	827	9.27
Wilcox Corn Special,	New Bedford,	Yes	868	
Worcester Rendering Co., Auburn, Mass.				
Royal Worcester Potato and Vegetable Fertilizer,	Worcester,	Yes	670	7.70
Royal Worcester Complete Dressing,	Worcester,	Yes	669	6.25
Royal Worcester Complete Dressing,	Worcester,	Yes	775	

Fertilizers furnishing Nitrogen and Phosphoric Acid — Concluded.

Nitrogen in 100 Pounds.						Phosphoric Acid in 100 Pounds.						
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Water Insoluble Organic.	Total.		Water Soluble.	Reverted.	Insoluble.	Total.		Available.	
				Found.	Guaranteed.				Found.	Guaranteed.	Found.	Guaranteed.
1.57	.47	1.08	Passed	3.12	3.29	8.52	2.30	1.40	12.22	11.00	10.82	10.00
4.67	.18	1.34	Passed	6.19	6.58	3.55	4.59	.59	8.73	9.00	8.14	8.00
.51	.47	.86	Passed	1.84	1.65	7.84	2.60	2.04	12.48	11.00	10.44	10.00
.77	.95	1.51	Passed	3.23	3.30	8.26	4.22	3.39	15.87	12.00	12.48	9.00
1.15	.99	.54	Passed	2.68	2.45	7.97	4.05	1.40	13.42	11.00	12.02	10.00
1.20	1.15	.99	Passed	3.34	3.28	6.98	2.72	2.37	12.07	11.00	9.70	10.00
1.54	1.34	1.35	Passed	4.23	4.10	4.27	6.50	2.65	13.42	9.00	10.77	8.00
1.68	.19	.04	Passed	1.91	1.00	2.58	1.17	.20	3.95	2.00	3.75	1.90
2.09	.24	1.88	Passed	4.21	4.12	2.42	1.33	1.12	4.87	5.00	3.75	4.00
.36	.26	.58	Passed	1.20	.82	7.42	3.19	1.20	11.81	11.00	10.61	10.00
1.23	.47	.81	Passed	2.51	2.46	7.62	3.18	1.73	12.53	11.00	10.80	10.00
1.43	.76	1.03	Passed	3.22	3.28	6.83	3.63	2.55	13.01	11.00	10.46	10.00
2.65	.64	.77	Passed	4.06	4.10	5.87	3.05	1.51	10.43	9.00	8.92	8.00
2.29	.43	1.06	Passed	3.78	4.12	6.89	2.65	4.21	13.75	9.00	9.54	8.00
2.13	.22	1.05	Passed	3.40	3.30	7.21	4.04	2.86	14.11	11.00	11.25	10.00
1.75	.78	.93	Passed	3.46	3.28	4.06	6.45	5.33	15.84	11.00	10.51	10.00
1.63	.89	1.43	Passed	3.95	4.10	4.72	6.02	4.90	15.64	9.00	10.74	8.00

Wood Ashes.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.	Total Phosphoric Acid in 100 Pounds.		Potash (K_2O) in 100 Pounds.		Acid Soluble Potash.	Calcium Oxide (CaO) in 100 Pounds.	Insoluble or Earthy Matter.
					Found.	Guaranteed.	Found.	Guaranteed.			
Ames Plow Co., Quincy Hall, Boston, Mass.											
North's Hardwood Ashes,	Boston,	No	893	22.16	1.42	1.50	2.91	6.30	3.68	30.72	12.07
North's Hardwood Ashes,	Swampscott,	Yes	944	1.98	1.33	1.50	6.50	6.30	7.02	35.67	10.57
Joseph Breck & Sons Corporation, Boston, Mass.											
Breck's Wood Ashes,	Boston,	No	307	6.65	.41	.50	.41	2.00	2.44	47.04	13.86
R. & J. Farquhar & Co., Boston, Mass.											
Pure Canada Unleached Hardwood Ashes,	Boston,	No	320	26.41	.37	1.00	.68	3.00	.92	6.80	50.84
Pure Canada Unleached Hardwood Ashes,	Dedham,	Yes	863	14.14	.88	.80	1.94	2.00	2.32	14.62	44.99
John Joynt, Lucknow, Ontario, Can											
Unleached Hardwood Ashes,	Sunderland,	Yes	1	4.72	2.00	1.00	6.12	3.00	7.33	34.41	12.00
Unleached Hardwood Ashes,	Whately,	Yes	2	9.66	1.74	1.00	7.39	6.00	9.83	33.75	6.37
Unleached Hardwood Ashes,	South Deerfield,	No	3	23.49	1.37	1.00	2.82	6.00	3.93	25.87	16.30
Unleached Hardwood Ashes,	Sunderland,	No	4	27.75	1.26	1.00	3.67	6.00	4.66	26.74	8.32
Unleached Hardwood Ashes,	Sunderland,	No	5	13.03	1.69	1.00	5.53	6.00	6.62	30.49	11.66
Unleached Hardwood Ashes,	Whately,	Yes	6	30.71	1.15	1.00	3.25	3.00	4.48	27.77	9.85
Unleached Hardwood Ashes,	South Deerfield,	Yes	13	16.58	2.14	1.00	6.18	6.00	6.84	29.80	7.76
Unleached Hardwood Ashes,	South Deerfield,	Yes	14	17.20	1.79	1.00	4.36	3.00	5.54	28.79	12.08
Unleached Hardwood Ashes,	South Deerfield,	Yes	15	21.79	2.06	1.00	4.32	3.00	5.98	27.38	11.29
Unleached Hardwood Ashes,	South Deerfield,	Yes	16	17.20	1.74	1.00	4.08	3.00	5.56	24.21	18.03
Unleached Hardwood Ashes,	Sunderland,	No	17	20.88	1.19	1.00	2.40	3.00	4.06	31.12	11.47
Unleached Hardwood Ashes,	Sunderland,	Yes	18	9.81	2.15	1.00	6.54	6.00	7.72	29.93	12.51
Unleached Hardwood Ashes,	East Whately,	Yes	19	20.64	2.04	1.00	4.98	3.00	6.73	27.78	11.62
Unleached Hardwood Ashes,	South Deerfield,	Yes	20	31.84	1.37	1.00	2.84	3.00	4.29	23.75	12.70
Unleached Hardwood Ashes,	South Deerfield,	No	21	26.70	1.20	1.00	1.95	3.00	3.45	25.47	13.98
Unleached Hardwood Ashes,	Sunderland,	Yes	25	23.32	1.33	1.00	2.81	3.00	3.20	30.00	13.79
Unleached Hardwood Ashes,	South Deerfield,	No	26	8.23	.15	1.00	.09	3.00	.51	53.72	5.79
Unleached Hardwood Ashes,	South Deerfield,	Yes	27	30.11	1.47	1.00	2.99	3.00	3.46	31.75	6.90
Unleached Hardwood Ashes,	Sunderland,	No	28	5.58	.10	1.00	.08	3.00	.27	52.84	8.49
Unleached Hardwood Ashes,	South Deerfield,	Yes	29	24.25	1.56	1.00	3.18	3.00	3.88	28.57	14.08
Unleached Hardwood Ashes,	Sunderland,	No	30	17.43	1.00	1.00	1.00	3.00	1.51	23.70	33.14
Unleached Hardwood Ashes.	Hatfield,	No	42	7.43	1.54	1.00	1.76	3.00	2.64	23.54	34.67

Unleached Hardwood Ashes,	Hatfield,	Yes	43	14.28	1.44	1.00	2.87	3.00	3.84	32.64	12.84
Unleached Hardwood Ashes,	Hatfield,	Yes	44	4.82	2.27	1.00	6.54	6.00	8.21	32.79	12.72
Unleached Hardwood Ashes,	Cushman,	Yes	45	19.15	1.66	1.00	4.84	3.00	6.39	27.06	16.14
Unleached Hardwood Ashes,	Bradstreet,	No	56	25.14	1.24	1.00	2.66	3.00	4.91	19.58	20.87
Unleached Hardwood Ashes,	South Deerfield,	Yes	74	12.81	1.78	1.00	6.81	6.00	9.37	25.50	14.48
Unleached Hardwood Ashes,	South Deerfield,	Yes	81	13.41	1.80	1.00	3.40	3.00	4.63	24.54	16.20
Unleached Hardwood Ashes,	Montague,	No	82	12.70	.74	1.00	1.49	3.00	2.05	21.48	32.69
Unleached Hardwood Ashes,	Northampton,	No	155	21.29	1.25	1.00	2.46	3.00	2.91	27.06	12.13
Unleached Hardwood Ashes,	Sunderland,	Yes	164	20.90	1.48	1.00	4.34	3.00	5.38	24.05	11.59
Unleached Hardwood Ashes,	Worcester,	No	196	18.59	.80	1.00	1.54	3.00	2.18	17.20	36.14
Unleached Hardwood Ashes,	Hatfield,	Yes	198	15.50	1.25	1.00	2.79	3.00	3.45	24.50	17.74
Unleached Hardwood Ashes,	Concord,	Yes	199	5.83	1.93	1.00	6.36	6.00	8.33	26.36	15.92
Unleached Hardwood Ashes,	Hatfield,	No	281	9.33	.73	1.00	1.57	3.00	2.04	15.41	51.88
Unleached Hardwood Ashes,	Hatfield,	Yes	282	15.08	1.61	1.00	7.34	6.00	8.49	31.51	9.56
Unleached Hardwood Ashes,	Shelburne Falls,	Yes	438	10.13	1.82	1.00	7.21	3.00	8.82	29.66	14.36
Unleached Hardwood Ashes,	Sunderland,	Yes	303	19.10	1.56	1.00	3.87	3.00	5.56	29.04	12.68
Unleached Hardwood Ashes,	South Deerfield,	Yes	666	9.95	2.18	1.00	6.29	6.00	6.94	31.14	12.03
Unleached Hardwood Ashes,	Sunderland,	Yes	779	20.92	1.44	1.00	4.96	3.00	6.43	26.86	12.39
Unleached Hardwood Ashes,	Westfield,	Yes	859	7.33	2.17	1.00	5.69	3.00	6.83	30.97	14.67
Unleached Hardwood Ashes,	Dighton,	Yes	862	22.00	1.28	1.00	3.48	3.00	4.17	26.36	15.47
Unleached Hardwood Ashes,	South Deerfield,	Yes	929	23.43	1.77	1.00	4.46	3.00	6.30	28.54	10.49
Unleached Hardwood Ashes,	South Deerfield,	Yes	930	14.36	1.91	1.00	5.74	3.00	7.38	30.48	10.21
Unleached Hardwood Ashes,	South Deerfield,	No	940	1.60	.17	1.00	.10	3.00	.16	57.09	9.54
Unleached Hardwood Ashes,	South Deerfield,	No	941	1.85	2.02	1.00	2.04	3.00	3.40	30.76	22.29
Unleached Hardwood Ashes,	Sunderland,	No	942	32.47	.73	1.00	1.63	3.00	2.11	31.19	6.22

Ground Bone, Tankage and Dry Ground Fish.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
American Agric. Chemical Co., Boston, Mass.				
Fine Ground Bone,	Middleborough,	Yes	357	4.87
Fine Ground Bone,	Haverhill,	Yes	596	
Fine Ground Bone,	Pittsfield,	Yes	845	
Farquhar's Fine Ground Bone,	Pittsfield,	Yes	322	5.17
Armour Fertilizer Works, Baltimore, Md.				
Armour's Bone Meal,	Salem,	Yes	555	3.91
Armour's Bone Meal,	Springfield,	Yes	571	
Armour's Bone Meal,	Great Barrington,	Yes	834	
Armour's Bone Meal,	Amherst,	Yes	935	4.78
Beach Soap Co., Lawrence, Mass.				
Beach's Fertilizer Bone,	Lawrence,	Yes	544	5.15
Berkshire Fertilizer Co., Bridgeport, Conn.				
Berkshire Dry Ground Fish,	Bradstreet,	Yes	58	6.43
Berkshire Dry Ground Fish,	North Hadley,	Yes	84	6.54
Berkshire Dry Ground Fish,	North Hadley,	No	113	6.31
Berkshire Dry Ground Fish,	Sunderland,	Yes	156	6.60
Bowker Fertilizer Co., 43 Chatham St., Boston, Mass.				
Bowker's Fresh Ground Bone,	Bridgewater,	Yes	398	5.97
Butchers Rendering Co., Fall River, Mass.				
Ground Tankage,	New Bedford,	No	200	7.70
Ground Tankage,	Fall River,	No	225	
John C. Dow & Co., Boston, Mass.				
Dow's Pure Ground Bone,	Boston,	Yes	309	6.15
Dow's Pure Ground Bone,	Boston,	Yes	334	
Dow's Pure Ground Bone,	Concord,	Yes	363	
Dow's Pure Ground Bone,	Framingham,	Yes	563	7.30
Dow's Pure Ground Bone,	Fitchburg,	Yes	676	
Dow's Pure Ground Bone,	Northborough,	Yes	737	
Dow's Tankage,	Concord,	Yes	372	5.15
Dow's Tankage,	Boston,	Yes	459	5.10
Thomas Hersom & Co., New Bedford, Mass.				
Pure Bone Meal,	New Bedford,	Yes	269	2.94
Meat and Bone,	New Bedford,	Yes	264	5.19
A. W. Higgins, Westfield, Mass.				
Ground Tankage,	South Deerfield,	Yes	34	6.03
Ground Tankage,	Amherst,	Yes	47	6.55
Ground Tankage,	North Amherst,	Yes	77	
Ground Tankage,	East Whately,	Yes	118	8.01
Ground Tankage,	Amherst,	Yes	121	7.49
Ground Tankage,	Shelburne Falls,	Yes	440	8.03
Dry Ground Fish,	Hadley,	Yes	9	6.70
Dry Ground Fish,	Sunderland,	Yes	10	7.14
Dry Ground Fish,	Hatfield,	Yes	11	6.72
Dry Ground Fish,	Hockanum,	Yes	415	9.31
Dry Ground Fish,	Deerfield,	Yes	663	8.30
Dry Ground Fish Tankage,	South Deerfield,	Yes	760	6.76
Home Soap Co., Worcester, Mass.				
Pure Ground Bone,	Millbury,	Yes	774	4.78
Ground Tankage,	Millbury,	Yes	776	4.56
Lowell Fertilizer Co., Boston, Mass.				
Lowell Ground Bone,	Worcester,	Yes	194	3.06
Lowell Ground Bone,	New Bedford,	Yes	211	
Lowell Ground Bone,	Fall River,	Yes	219	
Lowell Ground Bone,	Fall River,	Yes	226	
Lowell Ground Bone,	Taunton,	Yes	248	

Ground Bone, Tankage and Dry Ground Fish.

NITROGEN IN 100 POUNDS.						PHOSPHORIC ACID IN 100 POUNDS.							MECHANICAL ANALYSIS.	
				TOTAL.					TOTAL.		AVAILABLE.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Organic Nitrogen.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Fine Bone.	Coarse Bone.
–	–	–	Passed	2.79	2.47	–	–	–	24.64	22.88	–	–	56.36	43.64
–	–	–	Passed	3.27	2.47	–	–	–	23.01	22.88	–	–	58.47	41.53
–	–	–	Passed	2.79	2.47	–	–	–	26.86	22.00	–	–	52.88	47.12
–	–	–	Passed	2.42	2.47	–	–	–	26.70	22.00	–	–	–	–
–	–	–	Passed	3.85	2.26	–	–	–	24.52	20.00	–	–	49.88	50.12
–	–	–	Passed	8.20	8.23	–	3.86	2.40	6.26	6.00	3.86	–	–	–
–	–	–	Passed	8.42	8.23	–	3.85	2.27	6.12	6.00	3.85	–	–	–
–	–	–	Passed	8.04	8.23	–	3.70	2.45	6.15	6.00	3.70	–	–	–
–	–	–	Passed	8.13	8.23	–	3.44	2.73	6.17	6.00	3.44	–	–	–
–	–	–	Passed	3.23	2.47	–	–	–	23.11	22.88	–	–	47.16	52.84
–	–	–	Passed	4.60	4.10	–	–	–	14.11	18.00	–	–	57.69	42.31
–	–	–	Passed	2.48	2.00	–	–	–	23.34	24.00	–	–	66.76	33.24
–	–	–	Passed	2.20	2.00	–	–	–	24.47	24.00	–	–	54.20	45.80
–	–	–	Passed	5.02	5.00	–	–	–	14.62	14.00	–	–	50.36	49.64
–	–	–	Passed	5.07	5.00	–	–	–	14.87	14.00	–	–	51.98	48.02
–	–	–	Passed	2.18	2.00	–	–	–	24.52	24.00	–	–	65.20	34.80
–	–	–	Passed	4.96	4.00	–	–	–	18.22	16.00	–	–	69.61	30.39
–	2.46	3.22	Passed	5.68	5.50	–	–	–	15.54	15.00	–	–	–	–
–	–	–	Passed	5.99	5.50	–	–	–	14.40	15.00	–	–	41.67	58.33
–	–	–	Passed	6.04	5.50	–	–	–	13.60	15.00	–	–	35.38	64.62
–	–	–	Passed	7.90	7.75	–	–	–	7.87	7.00	–	–	39.05	60.95
–	–	–	Passed	7.94	7.75	–	–	–	7.17	7.00	–	–	38.73	61.27
–	–	–	Passed	7.73	7.00	–	6.29	6.30	12.59	11.00	6.29	–	–	–
–	–	–	Passed	8.49	7.00	–	7.01	7.40	14.41	11.00	7.01	–	–	–
–	–	–	Passed	7.30	7.00	–	6.30	5.46	11.76	11.00	6.30	–	–	–
–	–	–	Passed	7.58	7.00	–	7.55	5.10	12.65	11.00	7.55	–	–	–
–	–	–	Passed	7.38	7.00	–	7.22	3.78	11.00	11.00	7.22	–	–	–
–	3.78	4.46	Passed	8.24	8.23	.54	1.38	.15	2.07	–	1.92	–	–	–
–	–	–	Passed	3.13	2.00	–	–	–	23.93	28.00	–	–	35.74	64.26
–	–	–	Passed	7.34	5.00	–	–	–	13.90	18.00	–	–	30.44	69.56
–	–	–	Passed	2.84	2.48	–	–	–	25.18	20.00	–	–	67.60	32.40

Ground Bone, Tankage and Dry Ground Fish — Concluded.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.
Lowell Fertilizer Co. — Concluded.				
Lowell Ground Bone,	Fall River,	Yes	358	3.14
Lowell Ground Bone,	Brockton,	Yes	551	
Lowell Ground Tankage,	Boston,	Yes	338	6.29
Geo. E. Marsh & Co., Lynn, Mass.				
Marsh's Ground Bone,	Lynn,	Yes	565	6.30
Marsh's Ground Fish and Animal Tankage,	Lynn,	No	566	11.20
Marsh's Fish and Animal Tankage,	Lynn,	Yes	943	12.55
C. E. Mosher, South Deerfield, Mass.				
Fish Scrap,	Hatfield,	Yes	290	9.69
Dry Fish Scrap,	South Deerfield,	Yes	916	7.54
New England Dressed Meat & Wool Co., Boston, Mass.				
Bone Fertilizer,	Somerville,	Yes	389	4.60
Nitrate Agencies Co., New York City.				
Pure Ground Fine Bone,	Middleborough,	Yes	873	4.26
Ground High Grade Tankage,	South Hadley Center,	Yes	572	5.45
Ground High Grade Tankage,	Bridgewater,	Yes	609	9.85
Olds & Whipple, Hartford, Conn.				
Dry Ground Fish,	Bradstreet,	Yes	63	7.13
Dry Ground Fish,	North Hadley,	Yes	89	6.94
Parmenter & Polsey Fertilizer Co., Boston, Mass.				
P. & P. Ground Bone,	Northborough,	Yes	745	4.20
Rogers & Hubbard Co., Middletown, Conn.				
Hubbard's Strictly Pure Fine Bone,	East Milton,	Yes	557	8.66
Hubbard's Strictly Pure Fine Bone,	Plymouth,	Yes	619	
Hubbard's Pure Raw Knuckle Bone Flour,	East Milton,	Yes	559	11.11
M. L. Shoemaker & Co., Ltd., Philadelphia, Pa.				
Swift-Sure Bone Meal Fertilizer,	Sunderland,	Yes	165	3.70
Swift-Sure Bone Meal Fertilizer,	Sunderland,	Yes	416	
Springfield Rendering Co., Springfield, Mass.				
Springfield Ground Bone,	East Longmeadow,	Yes	135	4.98
Whitman & Pratt Rendering Co., Boston, Mass.				
Fine Ground Bone,	Rockland,	Yes	876	3.40
S. Winter Co., Brockton, Mass.				
Pure Ground Bone,	Brockton,	Yes	513	5.43
J. M. Woodard, Greenfield, Mass.				
Unground Tankage,	Greenfield,	Yes	910	3.80
Worcester Rendering Co., Worcester, Mass.				
Ground Bone,	Millis,	Yes	403	3.61
Ground Bone,	Spencer,	Yes	708	

Ground Bone, Tankage and Dry Ground Fish — Concluded.

Nitrogen in 100 Pounds.						Phosphoric Acid in 100 Pounds.							Mechanical Analysis.	
				total.					total.		available.			
As Nitrates and Ammoniates.	Water Soluble Organic.	Water Insoluble Organic.	Quality of Organic Nitrogen.	Found.	Guaranteed.	Water Soluble.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Fine Bone.	Coarse Bone.
–	–	–	Passed	2.72	2.45	–	–	–	27.04	20.00	–	–	81.40	18.60
–	–	–	Passed	5.37	5.00	–	–	–	16.86	14.00	–	–	51.47	48.53
–	–	–	Passed	3.92	2.47	–	–	–	21.07	22.88	–	–	57.73	42.27
–	–	–	Passed	4.65	6.58	–	–	–	14.57	9.15	–	–	48.18	51.82
–	–	–	Passed	7.07	6.58	–	5.54	2.50	8.04	9.15	–	–	–	–
–	–	–	Passed	7.92	6.00	–	4.24	.94	5.18	6.00	4.24	–	–	–
–	–	–	Passed	7.13	6.00	–	3.81	.71	4.52	6.00	3.81	–	–	–
–	–	–	Passed	3.40	2.75	–	–	–	23.55	20.00	–	–	45.30	54.70
–	–	–	Passed	2.92	2.47	–	–	–	24.70	22.00	–	–	57.30	42.70
–	–	–	Passed	5.88	5.75	–	–	–	8.70	6.86	–	–	37.58	62.42
–	–	–	Passed	6.06	5.75	–	–	–	6.94	6.86	–	–	39.98	60.02
–	–	–	Passed	9.67	8.23	–	4.75	2.78	7.53	5.50	4.75	–	–	–
–	–	–	Passed	9.80	8.23	–	4.80	2.60	7.40	5.50	4.80	–	–	–
–	–	–	Passed	2.64	2.47	–	–	–	26.40	20.00	–	–	65.24	34.76
–	–	–	Passed	2.86	2.50	–	–	–	25.21	26.00	–	–	50.28	49.72
–	–	–	Passed	3.82	3.82	–	–	–	25.00	24.70	–	–	76.71	23.29
–	–	–	Passed	5.47	4.53	–	–	–	22.14	20.00	–	–	65.07	34.93
–	–	–	Passed	3.23	2.46	–	–	–	25.92	20.00	–	–	71.42	28.58
–	–	–	Passed	2.75	2.47	–	–	–	24.59	22.88	–	–	61.59	38.41
–	–	–	Passed	3.62	3.25	–	–	–	25.05	24.15	–	–	63.00	37.00
–	–	–	Passed	4.79	4.50	–	–	–	18.27	18.00	–	–	–	–
–	–	–	Passed	2.68	2.46	–	–	–	26.15	20.00	–	–	76.38	23.62

Lime Compounds.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	CHEMICAL ANALYSIS OF LIME				
			CALCIUM OXIDE (CaO).		MAGNESIUM OXIDE (MgO).	
		Moisture.	Found.	Guaranteed.	Found.	Guaranteed.
Berkshire Hills Co., Sheffield, Mass.						
Agricultural Lime,	Sheffield,	.25	52.20	55.00	7.03	5.00
Edward Bryant Co., Boston, Mass.						
Land Lime,	Boston,	–	49.31	46.00	9.95	.85
Cheshire Lime Mfg. Co., Cheshire, Mass.						
Cheshire Agricultural Lime,	Amherst,	–	63.15	58.00	2.13	.60
Farnam Cheshire Lime Co., Farnams, Mass.						
Agricultural Lime,	Farnams,	–	60.81	60.00	.71	0–1.50
Hoosac Valley Lime Co., Adams, Mass.						
Adams Agricultural Lime,	Holyoke,	–	67.06	52.60	.90	.44
National Plant Food Co., Pensacola, Fla.						
Calcium Hydroxide,	M'f'r's sample,	.09	71.78	–	1.10	–
New England Lime Co., Danbury, Conn.						
Granular Lime,	Adams,	–	91.66	80.00	1.23	0–3.00
Agricultural Lime,	Adams,	7.60	57.67	50.00	2.49	0–4.00
Connecticut Agricultural Lime,	M'f'r's sample,	.59	58.09	40.00	13.04	15.00
Rockland & Rockport Lime Co., Rockland, Me.						
R. R. Land Lime,	West Springfield,	–	62.91	60.00	1.23	.50
R. R. Land Lime,	Whitman,					
R. R. Land Lime,	Beverly,					
R. R. Land Lime,	Salem,					
R. R. Land Lime,	Holyoke,					
R. R. Land Lime,	Danversport,					
LIME ASHES.						
Edward Bryant Co., Boston, Mass.						
Lime Ashes,	M'f'r's sample,	.02	55.28	–	–	–
Lime Ashes,	Boston,	1.43	45.31	46.00	–	–
Lime Ashes,	Eastham,	.30	55.20	46.00	2.67	.85
Lime Ashes,	Framingham,	.52	49.84	46.00	–	–
Hoosac Valley Lime Co., Adams, Mass.						
Adams Lime Ashes,	North Hadley,	2.24	58.01	36.00	.72	trace
Adams Lime Ashes,	North Hadley,					
George Lawrence, Holyoke, Mass.						
Lime Ashes,	Montague,	10.93	37.32	35.00	.50	.50
Lime Ashes,	Belchertown,	2.68	43.87	35.00	.51	.50
Lime Ashes,	Granby,	6.82	38.64	35.00	.62	.50
Lime Ashes,	South Hadley,	5.06	39.79	35.00	.40	.50
Lime Ashes,	South Hadley,	8.85	35.92	35.00	.54	.50
Lime Ashes,	North Amherst,	11.13	40.70	35.00	–	–
Lime Ashes,	Holyoke,	5.85	42.72	35.00	.70	.50
New England Lime Co., Danbury, Conn.						
Connecticut Lime Ashes,	M'f'r's sample,	4.76	37.88	20.00	8.13	10.00

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[1] Car lots in bulk for cash f. o. b. kilns.

[2] Small lots in bags for cash at retail.

[3] Car lots in bags for cash f. o. b. kilns.

[4] Acid soluble potash, 1.79 per cent.; water soluble potash, .33 per cent.; phosphoric acid, .41 per cent.

[5] Acid soluble potash, 3.26 per cent.; water soluble potash, 2.74 per cent.; phosphoric acid, .70 per cent.

[6] $8.50 per ton f. o. b. Rockland, Me.

[7] Acid soluble potash, .31 per cent.; water soluble potash, .23 per cent.; phosphoric acid, .15 per cent.

Lime Compounds.

Products.				Probable Composition of Lime Products as based upon Foregoing Analyses.						
Carbonic Acid (CO_2).	Insoluble Matter.	Laboratory Number.	Cost of 100 Pounds of Calcium and Magnesium Oxides.	Free Calcium Oxide (CaO).	Free Magnesium Oxide (MgO).	Hydrated or Slaked Lime Calcium Hydrate ($Ca(OH)_2$).	Calcium Carbonate ($CaCO_3$).	Magnesium Carbonate ($MgCO_3$).	Guaranteed Calcium and Magnesium Carbonates combined.	Magnesium Hydrate ($Mg(OH)_2$).
9.46	9.14	A 32	$0 38[1]	–	–	53.04	21.52	–	–	10.17
11.06	8.11	A 14	55[2]	–	–	46.53	25.16	–	–	14.40
25.14	1.37	A 1	65[2]	5.56	2.13	33.75	57.19	–	25.00	–
32.84	2.33	A 31	37[1]	8.65	.71	13.61	74.70	–	50.00	–
2.48	14.28	A 4	55[3]	16.36	.90	62.82	5.64	–	–	–
3.52	.41	A 37	–	–	–	88.92	8.01	–	–	1.59
3.00	1.92	A 29	–	81.03	1.23	9.00	6.82	–	–	–
5.88	3.86	A 30	–	–	–	66.29	13.38	–	–	3.60
14.16	1.93	A 35	–	–	13.04	52.91	32.21	–	–	–
15.58	2.31	A 5 A 6 A 15 A 16 A 18 A 19	51[3]	–	–	56.89	35.44	–	–	1.78
–	8.33	33[4]	–	–	–	–	–	–	–	–
–	7.62	382[5]	–[6]	–	–	–	–	–	–	–
–	12.11	936[7]	–[6]	–	–	–	–	–	–	–
–	13.67	937[8]	–[6]	–	–	–	–	–	–	–
9.64	6.14	A 2 A 3 [9]	–[10]	–	–	60.41	21.93	–	–	1.04
–	19.02	A 21[11]	–[12]	–	–	–	–	–	–	–
–	21.96	A 22[11]	–[12]	–	–	–	–	–	–	–
–	19.95	A 23[11]	–[12]	–	–	–	–	–	–	–
–	20.44	A 24[11]	–[12]	–	–	–	–	–	–	–
–	23.69	A 25[11]	–[12]	–	–	–	–	–	–	–
–	19.88	476[11]	–[12]	–	–	–	–	–	–	–
–	20.73	938[11]	–[12]	–	–	–	–	–	–	–
20.94	3.54	A 33[13]	–	–	–	14.79	47.63	–	–	11.76

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[8] Acid soluble potash, .20 per cent.; phosphoric acid, trace.

[9] Acid soluble potash, .22 per cent.; phosphoric acid, trace.

[10] $7.50 per ton in paper bags f. o. b., Adams, Mass.

[11] Average of seven analyses gives total potash, .40 per cent.; phosphoric acid, .14 per cent.

[12] $6 per ton and freight.

[13] Total potash, 8.65 per cent.; phosphoric acid, 1.10 per cent.

Lime Compounds — Concluded.

Name of Manufacturer and Brand.	Where Sampled.	Chemical Analysis of Lime				
			Calcium oxide (CaO.)		Magnesium oxide (MgO).	
		Moisture.	Found.	Guaranteed.	Found.	Guaranteed.
Ground Limestones.						
Fertile Chemical Co., Cleveland, Ohio.						
Lime-Fertile,	Boston,	–	39.69	35.84	5.88	4.96
Lime-Fertile,	Worcester,	–	27.25	35.84	10.31	4.96
Grangers Lime Co., W. Stockbridge, Mass.						
Grangers Ground Limestone,	Taunton,	.07	47.42	45.00	3.42	.50
Grangers Ground Limestone,	New Bedford,					
The Hampton Co., Easthampton, Mass.						
Precipitated Lime,	Amherst,	7.76	51.60	52.00	.98	.50
Missisquoi Lime Works, St. Albans, Vt.						
Ground Limestone,	M'f'r's sample,	.02	49.36	54.79	4.78	.12
Pownal Lime Co., 92 State St., Boston, Mass.						
Pownal Fine Ground Limestone,	Worcester,	.04	47.96	45.00	4.33	.50
Pownal Fine Ground Limestone,	Fitchburg,					
Rockland & Rockport Lime Co., Rockland, Me.						
R. R. Ground Limestone,	Medfield,	.08	50.00	51.00	1.41	0–3.00
Gypsum (Sulfate of Lime or Plaster).						
American Agric. Chem. Co., Boston, Mass.						
Fine Ground Nova Scotia Plaster,	Fall River,	6.08	37.94	32.95	.41	–
Bowker Fertilizer Co., Boston, Mass.						
Bowker's Nova Scotia Land Plaster,	Boston,	6.70	35.05	32.95	.33	–
Connecticut Adamant Plaster Co., New Haven, Conn.						
Land Plaster,	Holyoke,	13.74	32.46	36.25	.19	–
J. B. King & Co., New Brighton, N. Y.						
Land Plaster,	M'f'r's sample,	13.77	31.35	32.00	.39	1.00
Niagara Gypsum Co., Oakfield, N. Y.						
Gypsum,	M'f'r's sample,	17.58	32.33	32.00	1.61	1.50

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[1] A 13: total phosphoric acid, 5.46 per cent.; available phosphoric acid, .83 per cent.; guaranteed, 3 per cent. total. A 27: total phosphoric acid, 3.02 per cent.; available phosphoric acid, .62 per cent.; guaranteed, 3 per cent. total.

[2] Retail price $50 to $55 per ton.

[3] Car lots in bags for cash delivered.

Lime Compounds — Concluded.

PRODUCTS.		Laboratory Number.	Cost of 100 Pounds of Calcium and Magnesium Oxides.	EQUIVALENT IN CALCIUM AND MAGNESIUM CARBONATES.			MECHANICAL ANALYSIS. AMOUNTS (IN PERCENTAGES) THAT WILL PASS VARIOUS MESHED SIEVES.				
Carbonic Acid (CO_2).	Insoluble Matter.			Calcium Carbonate ($CaCO_3$).	Magnesium Carbonate ($MgCO_3$).	Guaranteed Calcium and Magnesium Carbonates combined.	100 Mesh.	80 Mesh.	60 Mesh.	40 Mesh.	20 Mesh.
32.96	3.54	A 13[1]	–[2]	70.83	12.30	52.80	62.46	63.82	70.62	76.32	91.94
28.16	10.69	A 27[1]	–[2]	48.63	21.56	52.80	70.53	73.83	89.42	97.20	100.00
–	8.51	A 10 A 11	.69[3]	84.62	7.15	90.00	82.87	85.37	97.50	100.00	100.00
28.48	.81	A 28	–[4]	64.79	–[5]	–[5]	100.00	–	–	–	–
–	2.45	A 36	–	88.08	10.00	98.03	28.66	29.92	37.06	44.71	69.32
–	4.53	A 8 A 26	.67[6]	85.58	9.06	91.00	81.50	84.04	90.97	94.69	100.00
–	6.55	A 20	1.26[6]	89.23	2.95	92.00	71.06	75.55	85.17	93.48	100.00
										CALCIUM SULFATE GYPSUM ($CaSO_4$).	
										Found.	Guaranteed.
2.28	1.21	A 9	–	4.16	.86	–	–	–	–	86.44	80.00
4.00	2.40	A 17	–	8.28	.69	–	–	–	–	73.82	80.00
.76	1.12	A 7	–	1.25	.40	–	–	–	–	77.10	88.00
4.28	.56	A 34	–	8.76	.82	–	–	–	–	64.18	–
–	2.07	A 12	–	–	–	–	–	–	–	78.48	78.00

[4] $5.50 per ton f. o. b. cars Easthampton.

[5] Hydrated lime, 20.20 per cent.; magnesium hydrate, 1.42 per cent.

[6] Small lots in bags for cash at retail.

Nitrogen Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.	Nitrogen in 100 Pounds.	
					Found.	Guaranteed.
American Agric. Chem. Co., Boston, Mass.						
Nitrate of Soda,	Fall River,	Yes	239	1.43	15.92	15.00
Nitrate of Soda,	Sturbridge,	Yes	730			
Nitrate of Soda,	Pittsfield,	Yes	841			
Armour Fert. Works, Baltimore, Md.						
Nitrate of Soda,	Mansfield,	Yes	871	1.11	15.50	14.81
Beach Soap Co., Lawrence, Mass.						
Nitrate of Soda,	Lawrence,	Yes	546	.53	15.16	15.00
Berkshire Fertilizer Co., Bridgeport, Conn.						
Nitrate of Soda,	South Deerfield,	Yes	174	2.15	15.28	14.80
Bowker Fertilizer Co., Boston, Mass.						
Nitrate of Soda,	Leominster,	Yes	191	1.67	16.08	15.00
Nitrate of Soda,	Amherst,	No	933	1.31	14.84	15.00
F. W. Brode & Co., Memphis, Tenn.						
Cottonseed Meal,	North Hadley,	Yes	79	7.99	7.14	6.88
Cottonseed Meal,	Hatfield,	No	117	7.41	6.55	6.88
Cottonseed Meal,	Whately,	No	207	7.85	6.68	6.88
Cottonseed Meal,	Hadley,	No	208	6.91	6.55	6.88
Cottonseed Meal,	Hadley,	No	209	6.48	6.68	6.88
Cottonseed Meal,	Cushman,	No	304	7.32	6.37	6.88
Cottonseed Meal,	South Deerfield,	No	715	7.50	6.71	6.88
Cottonseed Meal,	Hockanum,	No	717	7.20	6.34	6.88
Cottonseed Meal,	North Hadley,	No	718	6.98	6.33	6.88
Cottonseed Meal,	Cushman,	No	811	8.42	6.50	6.88
Cottonseed Meal,	Cushman,	No	812	8.17	6.48	6.88
Buckeye Cotton Oil Co., Cincinnati, Ohio.						
Cottonseed Meal,	Hatfield,	Yes	62	8.11	5.82	5.76
Cottonseed Meal,	Bradstreet,	Yes	68	8.03	5.76	5.76
Cottonseed Meal,	Bradstreet,	Yes	37	7.51	5.76	5.76
Cottonseed Meal,	Bradstreet,	Yes	49	8.41	5.81	5.76
Cottonseed Meal,	Hadley,	Yes	210	7.74	5.92	5.76
Cottonseed Meal,	South Amherst,	Yes	434	6.82	5.93	5.76
Cottonseed Meal,	Attleboro,	No	605	10.26	5.59	5.76
Cottonseed Meal,	Ayer,	No	781	7.95	5.48	5.76
Cottonseed Meal,	Amherst,	Yes	861	6.71	5.91	5.76
Coe-Mortimer Co., New York City.						
Nitrate of Soda,	Berlin,	Yes	898	1.49	15.44	15.00
Essex Fertilizer Co., Boston, Mass.						
Nitrate of Soda,	New Bedford,	Yes	256	1.34	15.82	15.00
A. W. Higgins, Westfield, Mass.						
Nitrate of Soda,	South Deerfield,	Yes	120	1.22	15.12	15.00
Sulfate of Ammonia,	Feeding Hills,	Yes	531	.50	21.36	20.50
Castor Pomace,	Feeding Hills,	Yes	529	12.07	4.68	4.50
Cottonseed Meal,	Sunderland,	No	433	7.58	6.21	6.88
Cottonseed Meal,	North Hadley,	No	435	7.00	6.37	6.88
Humphreys-Godwin Co., Memphis, Tenn.						
Forfat Brand Cottonseed Meal,	South Lawrence,	Yes	582	9.34	6.19	6.17
Danish Brand Cottonseed Meal,	Amherst,	No	78	6.70	5.71	5.75
Danish Brand Cottonseed Meal,	Amherst,	Yes	22	6.95	6.19	5.75

NOTE. — A composite sample, composed of equal weights taken from samples representing 55 carloads of cottonseed meal, analyzed 1.71 per cent. potassium oxide (K_2O) and 2 per cent. phosphoric acid.

Nitrogen Compounds — Concluded.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.	NITROGEN IN 100 POUNDS.	
					Found.	Guaranteed.
Humphreys-Godwin Co. — Concluded.						
Danish Brand Cottonseed Meal,	Amherst,	Yes	39	8.07	5.77	5.75
Danish Brand Cottonseed Meal,	North Amherst,	No	40	8.58	5.63	5.75
Danish Brand Cottonseed Meal,	Whately,	No	176	7.41	5.61	5.75
Danish Brand Cottonseed Meal,	Middleborough,	No	326	8.85	5.54	5.75
Danish Brand Cottonseed Meal,	North Hadley,	No	432	8.77	5.57	5.75
Danish Brand Cottonseed Meal,	Cushman,	No	436	7.39	5.71	5.75
Danish Brand Cottonseed Meal,	Feeding Hills,	No	522	7.49	5.69	5.75
Danish Brand Cottonseed Meal,	Feeding Hills,	No	524	7.34	5.61	5.75
Danish Brand Cottonseed Meal,	Feeding Hills,	Yes	525	8.47	6.03	5.75
Danish Brand Cottonseed Meal,	Feeding Hills,	Yes	526	8.03	5.95	5.75
Danish Brand Cottonseed Meal,	Feeding Hills,	No	527	7.86	5.68	5.75
Danish Brand Cottonseed Meal,	Feeding Hills,	No	528	7.13	5.61	5.75
Danish Brand Cottonseed Meal,	Millis,	No	606	7.63	5.69	5.75
Danish Brand Cottonseed Meal,	Deerfield,	Yes	665	7.34	5.75	5.75
Danish Brand Cottonseed Meal,	Feeding Hills,	Yes	523	7.49	6.03	5.75
Dixie Brand Cottonseed Meal,	Feeding Hills,	No	325	8.57	6.47	6.50
Lowell Fertilizer Co., Boston, Mass.						
Nitrate of Soda,	Concord,	Yes	371	1.73	15.42	15.00
Dried Blood,	Dighton,	No	494[1]	14.11	12.07	13.00
Nitrate Agencies Co., New York City.						
Nitrate of Soda,	East Longmeadow,	Yes	133	1.77	15.34	15.00
Nitrate of Soda,	New Bedford,	Yes	267			
Nitrate of Soda,	Boston,	Yes	312			
Nitrate of Soda,	Boston,	Yes	332	1.39	15.44	15.00
Nitrate of Soda,	S. Hadley Center,	Yes	567			
Nitrate of Soda,	Bridgewater,	Yes	610			
Nitrapo,	Berlin,	Yes	899[2]	1.58	14.32	15.00
Sanderson Fert. & Chem. Co., New Haven, Conn.						
Nitrate of Soda,	Dighton,	Yes	478	1.79	15.36	15.00
J. E. Soper Co., Boston, Mass.						
Cottonseed Meal,	Jefferson,	Yes	780	7.87	5.75	5.75
Union Seed & Fertilizer Co., New York City.						
Surety Brand Cottonseed Meal,	Holyoke,	Yes	12	8.11	6.27	5.76
Surety Brand Cottonseed Meal,	Amherst,	Yes	38	7.92	6.09	5.76
Surety Brand Cottonseed Meal,	Hatfield,	Yes	41	8.49	5.90	5.76
Surety Brand Cottonseed Meal,	Bradstreet,	No	50	8.59	5.70	5.76
Surety Brand Cottonseed Meal,	Hatfield,	Yes	279	6.55	5.79	5.76
Surety Brand Cottonseed Meal,	Hatfield,	Yes	280	7.21	6.02	5.76
Surety Brand Cottonseed Meal,	North Amherst,	Yes	421	7.24	5.97	5.76
Surety Brand Cottonseed Meal,	Sunderland,	Yes	716	7.20	5.74	5.76
Surety Brand Cottonseed Meal,	Bradstreet,	Yes	855	6.57	6.17	5.76
Surety Brand Cottonseed Meal,	Westfield,	Yes	122	9.28	6.03	5.76
Surety Brand Cottonseed Meal,	Westfield,	Yes	123	9.58	6.00	5.76
Wilcox Fertilizer Co., Mystic, Conn.						
Nitrate of Soda,	Fall River,	Yes	215	2.76	15.18	15.00

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[1] Total phosphoric acid, 1.17 per cent.

[2] Water soluble potash (K_2O) found, 17.70 per cent.; guarantee, 15 per cent.

NOTE. — A composite sample, composed of equal weights taken from samples representing 55 carloads of cottonseed meal, analyzed 1.71 per cent. potassium oxide (K_2O) and 2 per cent. phosphoric acid.

Phosphoric Acid Compounds.

Name of Manufacturer and Brand.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.	Phosphoric Acid in 100 Pounds.						
					Water Soluble.	Reverted.	Insoluble.	Total.		Available.	
								Found.	Guaranteed.	Found.	Guaranteed.
Phosphoric Acid Compounds.											
American Agric. Chem. Co., Boston, Mass.											
Acid Phosphate, 14 per cent.,	Whitman,	Yes	388	7.72	9.95	4.59	.89	15.43	15.00	14.54	14.00
Acid Phosphate, 16 per cent.,	Fall River,	Yes	234	6.49	12.50	4.34	.64	17.48	17.00	16.84	16.00
Acid Phosphate, 16 per cent.,	Boston,	Yes	383								
Acid Phosphate, 16 per cent.,	Millis,	Yes	401								
Acid Phosphate, 16 per cent.,	Framingham,	Yes	562	6.78	11.97	4.64	1.38	17.99	17.00	16.61	16.00
Acid Phosphate, 16 per cent.,	Pepperell,	Yes	786								
Acid Phosphate, 16 per cent.,	Attleboro,	Yes	875								
Armour Fertilizer Works, Baltimore, Md.											
Acid Phosphate, 16 per cent.,	East Longmeadow,	Yes	132	10.90	14.67	1.40	.61	16.68	16.50	16.07	16.00
Acid Phosphate, 16 per cent.,	Worcester,	Yes	195								
Acid Phosphate, 16 per cent.,	Middleborough,	Yes	391								
Acid Phosphate, 16 per cent.,	Sunderland,	Yes	661	4.84	13.81	2.56	.26	16.63	16.50	16.37	16.00
Beach Soap Co., Lawrence, Mass.											
Acid Phosphate, 16 per cent.,	Lawrence,	Yes	545	9.23	15.31	2.71	.20	18.22	-	18.02	16.00
Bowker Fertilizer Co., Boston, Mass.											
Bowker's Soluble Phosphate, 14 per cent.,	Boston,	Yes	335	7.59	8.74	5.53	2.73	17.00	15.00	14.27	14.00
Bowker's Soluble Phosphate, 14 per cent.,	Dighton,	Yes	495								
Bowker's Soluble Phosphate, 14 per cent.,	Lawrence,	Yes	583								
Bowker's Soluble Phosphate, 14 per cent.,	Natick,	Yes	589								
Bowker's Soluble Phosphate, 14 per cent.,	Mansfield,	Yes	603								
Bowker's 16 per cent. Acid Phosphate,	South Dartmouth,	Yes	874	7.64	11.65	4.68	1.71	18.04	17.00	16.33	16.00
Bowker's 16 per cent. Acid Phosphate,	Amherst,	Yes	934	7.92	12.60	3.76	1.12	17.48	17.00	16.36	16.00
Coe-Mortimer Co., New York City.											
E. Frank Coe's H. G. Soluble Phos., 14 per cent.,	South Amherst,	Yes	514	6.61	10.91	4.96	.87	16.74	15.00	15.87	14.00
E. Frank Coe's 16 per cent. Acid Phosphate,	North Amherst,	Yes	32	8.88	12.67	3.81	1.12	17.60	17.00	16.48	16.00
E. Frank Coe's 16 per cent. Acid Phosphate,	North Amherst,	Yes	76	8.25	12.28	4.99	1.33	18.60	17.00	17.27	16.00
E. Frank Coe's 16 per cent. Acid Phosphate,	Feeding Hills,	Yes	323								
E. Frank Coe's 16 per cent. Acid Phosphate,	North Amherst,	Yes	423								
Essex Fertilizer Co., Boston, Mass.											
Acid Phosphate, 16 per cent.,	New Bedford,	Yes	212	11.85	13.80	3.29	.26	17.35	17.00	17.09	16.00

Thomas Hersom & Co., New Bedford, Mass.											
Acid Phosphate,	New Bedford,	Yes	270	8.17	13.94	3.89	.28	18.11	-	17.83	16.00
A. W. Higgins, Westfield, Mass.											
Acid Phosphate,	Amherst,	Yes	72	9.73	13.30	3.89	.03	17.22	-	17.19	16.00
Acid Phosphate,	East Whately,	Yes	119	9.70	14.39	2.54	.33	17.26	-	16.93	16.00
Acid Phosphate,	Sunderland,	Yes	206	11.70	14.99	1.34	.46	16.79	-	16.33	16.00
Acid Phosphate,	Shelburne Falls,	Yes	439	10.24	14.64	2.18	.15	16.97	-	16.82	16.00
Acid Phosphate,	Feeding Hills,	Yes	530	9.43	14.83	3.74	.51	19.08	-	18.57	16.00
Lowell Fertilizer Co., Boston, Mass.											
Acid Phosphate,	Taunton,	No	260	7.43	7.21	5.35	.20	12.76	15.00	12.56	14.00
National Fertilizer Co., Boston, Mass.											
Acid Phosphate, 16 per cent.,	Sunderland,	Yes	204	7.89	12.28	4.76	.87	17.91	17.00	17.04	16.00
Nitrate Agencies Co., New York City.											
Acid Phosphate, 16 per cent.,	South Hadley,	Yes	573	9.01	13.78	2.67	.77	17.22	17.00	16.45	16.00
Acid Phosphate, 16 per cent.,	Bridgewater,	Yes	607								

Phosphoric Acid and Potash Compounds.

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.	PHOSPHORIC ACID IN 100 POUNDS.						
					Water Soluble.	Reverted.	Insoluble.	TOTAL.		AVAILABLE.	
								Found.	Guaranteed.	Found.	Guaranteed.
F. S. Royster Guano Co., Baltimore, Md.											
Acid Phosphate, 16 per cent.,	South Deerfield,	Yes	168	10.20	13.37	2.70	1.35	17.42	16.50	16.07	16 00
Acid Phosphate, 16 per cent.,	Pittsfield,	Yes	830								
Sanderson Fert. & Chem. Co., New Haven, Conn.											
Plain Superphosphate, 14 per cent.,	Dighton,	Yes	482	9.68	13.18	1.52	1.25	15.95	15.00	14.70	14.00
Plain Superphosphate, 14 per cent.,	Three Rivers,	Yes	823								
Plain Superphosphate, 14 per cent.,	Pittsfield,	Yes	843								
Plain Superphosphate, 16 per cent.,	Taunton,	No	480	13.28	8.52	6.94	.92	16.38	17.00	15.46	16.00
Springfield Rend. Co., Springfield, Mass.											
Acid Phosphate,	East Longmeadow,	Yes	130	6.75	15.82	3.62	.41	19.85	-	19.44	17.00
Wilcox Fertilizer Co., Mystic, Conn.											
Acid Phosphate,	Three Rivers,	Yes	822	8.65	14.07	3.66	1.02	18.75	17.00	17.73	16.00
Federal Chem. Co., Louisville, Ky.											
Ground Phosphate Rock,	Manufacturer's sample,	No	881	.69	-	-	-	31.30	32.00	-	-
Witherbee, Sherman & Co., Port Henry, N. Y.											
Mineral Phosphate with Sulphide of Barium,	Grafton,	Yes	890[1]	.12	trace	1.63	13.57	15.20	14.00	1.63	-

NAME OF MANUFACTURER AND BRAND.	Where Sampled.	Guarantee substantially met.	Laboratory Number.	Moisture.	PHOSPHORIC ACID.		POTASH (K_2O) IN 100 POUNDS.		Acid Soluble Potash (K_2O).	CALCIUM OXIDE (CaO).	
					Found.	Guaranteed.	Found.	Guaranteed.		Found.	Guaranteed.
POTASH COMPOUNDS.											
Alpha Portland Cement Co., Easton, Pa.											
Alpha Potash-Lime Fertilizer,	Holyoke,	Yes	139	.40	1.20	-	2.93	2.50	7.40	24.34	30.00
A. W. Higgins, Westfield, Mass.											
Manure Ashes,	Amherst,	Yes	23[2]	.30	2.94	-	3.51	3.00	5.66	5.08	-
Manure Ashes,	Hadley,	Yes	24[3]	.58	2.78	-	3.69	3.00	6.28	5.08	-

Manure Ashes,	Sunderland,	Yes	31[4]	.12	2.93	–	3.49	3.00	5.80	–	–
Manure Ashes,	Amherst,	Yes	46[5]	.50	2.84	–	4.43	3.00	6.46	5.20	–
Flue Dust,	South Deerfield,	Yes	7[6]	28.12	.41	–	1.94	1.00	3.62	4.66	–
Flue Dust,	Bradstreet,	Yes	8[7]	.28	.97	–	2.39	1.00	4.34	7.25	–
Flue Dust,	Northampton,	Yes	116	2.51	.86	–	7.29	1.00	10.52	–	–
Flue Dust,	Easthampton,	Yes	687	1.54	.87	–	6.82	1.00	10.31	–	–
GROUND ROCK.											
Nature's Plant Food Co., Boston, Mass.											
Nature's Plant Food,	Boston,	No	660	.03	.16	.23	.06	–	–[8]	–[8]	2.97
Nature's Plant Food,	Boston,	No	798								
Nature's Plant Food,	Boston,	No	799								
Nature's Plant Food,	Boston,	No	884								
Nature's Plant Food,	Boston,	No	908								

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[1] Insoluble matter, 40.38 per cent.

[2] Insoluble matter, 71.93 per cent.

[3] Insoluble matter, 69.92 per cent.

[4] Insoluble matter, 76.60 per cent.

[5] Insoluble matter, 69.48 per cent.

[6] Insoluble matter, 27.51 per cent.

[7] Insoluble matter, 39.17 per cent.

[8] No. 660, etc., potash soluble in hydrofluoric acid, 2.14 per cent.; potash soluble in hydrochloric acid (specific gravity 1.115), 1.87 per cent.; calcium oxide, 1.26 per cent.

CONTROL SERIES BULLETIN No. 10 OCTOBER, 1918

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION

INSPECTION OF COMMERCIAL FEEDSTUFFS

By P. H. SMITH

AND

GRAIN RATIONS FOR DAIRY STOCK

By J. B. LINDSEY

This bulletin contains, in a somewhat condensed form, the results of the feeding stuff inspection for the year ending September 1, 1918. In addition will be found a special article entitled "Grain Rations for Dairy Stock." A tabulated list of the wholesale cost of feedstuffs for the year, based upon the Boston rate, is also given.

Requests for bulletins should be addressed to the
AGRICULTURAL EXPERIMENT STATION
AMHERST, MASS.

Publication of this Document
approved by the
Supervisor of Administration.

DEPARTMENT OF CHEMISTRY.

J. B. LINDSEY, *Chemist.*

INSPECTION OF COMMERCIAL FEED-STUFFS.

BY P. H. SMITH, CHEMIST IN CHARGE.[1]

INTRODUCTION.

This bulletin is a report of the feeding stuff inspection extending from September 1, 1917, to September 1, 1918, and authorized by the Massachusetts Acts and Resolves for 1912, chapter 527, entitled "An Act to regulate the sale and analysis of food stuff used for feeding live stock and poultry." During the year, 176 dealers, located in 108 different towns, were visited at least once and about 1,200 samples were collected and analyzed. One thousand two hundred and forty-six brands of feeding stuffs were registered for sale, not all of which, however, were found by the inspector.

War conditions have brought about a number of changes in the feeding stuff situation. Brewers' and distillers' dried grains and malt sprouts are practically out of the market, and the wheat by-products, bran and middlings are in limited supply. On the other hand, a number of feeding stuffs new to Massachusetts, or at least seldom used, such as velvet bean feed, cocoanut oil cake meal, peanut oil cake feed, barley feed, corn feed meal, rye feed and oat feed, are being offered. The value and use of these feeds will be discussed later in this bulletin.

The past winter, because of freight congestion and severe weather, found many dealers with stocks exhausted. This condition was followed in the spring by the late arrival of goods long overdue and caused the overloading of elevators and storehouses. It is to the credit of the grain dealers that few violations of the feeding stuff law came to our attention even under such unfavorable conditions. Early in the year one dealer was prosecuted and found guilty for selling a so-called meat scrap decidedly below guarantee.

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[1] The inspection and collection of samples were carried out by J. T. Howard. The analyses of the samples were made by J. B. Smith, B. L. Peables, Esther Mixer and the writer.

Complete Average Analysis of Feeds collected (Per Cent.).

I. Protein Feeds.

Number of Samples.	Feedstuffs.	Name of Manufacturer.	Water.	Protein.		Fat.		Nitrogen Free Extract.	Fiber.		Ash.
				Found.	Guaranteed.	Found.	Guaranteed.		Found.	Guaranteed.	
	Cottonseed Meal.										
4	Dove,	F. W. Brode & Co.,	7.94	38.22	38.63	6.57	6.00	29.86	11.07	12.00	6.34
8	Jay,	F. W. Brode & Co.,	7.29	37.20	36.00	7.57	5.00	40.85	10.93	14.00	6.16
15	Buckeye, Good,	Buckeye Cotton Oil Co.,	8.20	36.33	36.00	6.18	5.00	29.84	13.67	14.00	5.78
1	Baby Camel,	C. L. Campbell & Co.,	7.90	34.36	36.00	5.48	6.00	32.35	15.12	15.00	4.79
3	St. Clair,	East St. Louis Cotton Oil Co.,	7.66	37.68	36.00	6.39	5.00	30.52	11.55	16.00	6.20
1	Milko,	H. F. H. Eberts,	6.71	37.09	38.62	5.25	5.50	30.05	14.53	10.00	6.37
1	Gilt Edge,	Empire Cotton Oil Co.,	6.73	37.11	36.00	5.85	5.50	31.72	12.22	14.00	6.37
1	Arkansaw,	Hayes Grain & Commission Co.,	7.94	37.91	36.00	7.21	5.00	29.91	11.03	15.00	6.00
23	Danish,	Humphreys-Godwin Co.,	7.56	36.22	36.00	6.21	5.00	30.93	12.35	15.00	6.73
6	Forfat,	Humphreys-Godwin Co.,	7.62	38.17	38.55	6.55	5.00	31.71	10.06	12.00	5.89
1	Jersey,	Lanier Bros. ,	7.96	39.14	38.62	6.79	6.00	29.03	11.96	10.00	5.12
1	Thirty-Six,	L. B. Lovitt,	9.86	33.75	36.00	8.60	5.50	31.53	10.56	14.00	5.70
4	Avon,	J. M. MacDonald,	8.55	33.94	36.00	6.95	5.00	32.91	11.71	14.00	5.94
2	Kineda,	J. M. MacDonald,	7.88	36.91	38.60	6.91	6.00	29.93	12.16	12.00	6.21
4	Tip Top,	Meridian Grain & Elevator Co.,	8.21	37.69	36.00	6.75	5.00	29.94	12.00	15.00	5.41
1	Star,	C. L. Montgomery & Co.,	6.55	34.64	36.00	4.84	6.00	34.04	14.15	14.00	5.78
1	Dirigo,	W. Newton Smith,	7.70	36.70	38.50	5.34	7.00	31.97	12.75	10.50	5.54
2	Pilgrim,	J. E. Soper Co.,	7.93	39.36	38.50	7.04	5.00	29.83	9.32	12.50	6.52
8	Puritan,	J. E. Soper Co.,	7.23	36.83	36.00	6.72	5.00	31.65	11.84	15.00	5.73
1	Good,	Taylor Commission Co.,	10.60	35.81	36.00	6.58	5.50	28.43	12.80	14.00	5.78
5	Surety,	Union Seed & Fertilizer Co.,	7.81	36.03	36.00	6.25	5.50	31.24	12.87	14.00	5.80
	Cottonseed Feed.										
1	M. F. B.,	M. F. Baringer,	8.26	21.24	20.00	4.15	3.00	40.69	21.29	26.00	4.37
1	Buco,	Buckeye Cotton Oil Co.,	9.42	18.13	20.00	3.13	3.50	41.44	24.25	27.00	3.63
10	"77,"	Humphreys-Godwin Co.,	7.64	20.77	20.00	3.72	4.00	40.69	23.02	28.00	4.16
2	Cyclone,	Memphis Cotton Hull & Fibre Co.,	9.04	20.23	20.00	3.49	3.00	41.01	22.12	26.00	4.11
2	Globe,	C. L. Montgomery & Co.,	7.99	25.02	20.00	5.31	3.50	36.52	20.55	27.00	4.61
3	Plymouth,	J. E. Soper Co.,	8.33	19.70	20.00	4.21	3.00	40.37	23.47	27.00	3.92
1	Columbia,	Union Seed & Fertilizer Co.,	9.71	24.34	20.56	5.03	3.00	38.22	18.44	25.00	4.26
	Linseed Oil Meal.										
7	Old Process,	American Linseed Co.,	8.96	35.72	34.00	6.33	5.00	36.10	7.60	8.00	5.29
1	Amco, old process, with screenings,	American Milling Co.,	9.06	28.50	30.00	6.65	5.00	39.41	9.21	10.00	7.17
4	Old Process,	Archer-Daniels Linseed Co.,	9.21	35.73	33.00	6.92	6.00	35.53	7.11	10.00	5.50
2	Old Process,	Kelloggs & Miller,	7.20	34.86	31.00	7.26	4.00	37.15	7.47	9.00	6.06
7	Old Process,	Midland Linseed Products Co.,	8.63	34.81	32.00	7.33	5.00	36.22	7.50	9.50	5.51
4	Old Process,	Spencer Kellogg & Sons,	8.65	34.70	33.00	6.52	5.00	36.98	7.61	10.00	5.54

	MISCELLANEOUS OIL CAKE MEALS.										
5	Homcoline, corn germ meal,	American Hominy Co.,	6.29	18.07	17.00	6.19	5.00	57.42	4.89	7.00	7.14
1	Amco, corn germ meal,	American Milling Co.,	7.28	14.76	15.50	9.00	7.00	60.27	3.23	9.00	5.46
3	Spring Garden, corn germ meal,	Baltimore Pearl Hominy Co.,	7.03	15.43	12.00	7.79	6.00	60.47	3.57	6.00	5.71
1	Argo, corn germ meal,	Corn Products Refining Co.,	7.07	22.94	18.00	13.54	7.50	46.36	8.27	13.00	1.82
5	Cocoanut oil meal,	Spencer Kellogg & Sons,	8.62	20.83	20.00	7.98	5.00	48.68	7.93	11.00	5.96
1	B. B. peanut oil cake feed,	F. W. Brode & Co.,	8.02	37.91	36.00	8.38	5.00	23.93	18.38	14.00	3.38
3	Liberty, peanut oil cake feed,	Humphreys-Godwin Co.,	7.63	31.32	30.00	7.26	6.00	22.99	26.71	25.00	4.09
	GLUTEN MEAL.										
13	Diamond,	Corn Products Refining Co.,	8.39	43.29	40.00	1.22	1.00	41.93	3.66	4.00	1.51
	GLUTEN FEED.										
7	Cream of Corn,	American Maize Products Co.,	7.98	24.21	23.00	3.07	1.50	55.38	6.80	8.50	2.56
20	Buffalo,	Corn Products Refining Co.,	9.47	27.50	23.00	2.48	1.00	49.43	6.89	8.50	4.23
1	Crescent,	Corn Products Refining Co.,	8.66	26.79	23.00	2.15	1.00	50.71	7.28	8.50	4.41
1	Douglas,	Douglas Co.,	11.04	23.82	23.00	1.63	1.00	53.46	6.32	8.00	3.73
1	K. K. K.,	J. C. Hubinger Bros. Co.,	9.22	23.47	23.00	2.86	2.40	56.24	6.00	7.50	2.21
2	Staley's,	A. E. Staley Mfg. Co.,	9.06	24.74	20.00	2.37	2.50	53.65	6.83	12.00	3.35
	DISTILLERS' GRAINS.										
1	Ajax Flakes,	Ajax Milling & Feed Co.,	7.29	30.38	30.00	9.71	10.00	38.29	11.56	14.00	2.77
3	Empire State,	American Milling Co.,	6.04	30.53	30.00	10.86	10.00	38.45	11.11	14.00	3.01
4	Atlas,	Atlas Feed & Milling Co.,	6.84	31.72	30.00	7.79	10.00	39.47	11.72	14.00	2.46
2	Columbia,	Grain Products Sales Co.,	6.06	27.02	30.00	8.42	10.00	45.45	9.20	14.00	3.85
3	Continental,	Continental Cereal Co.,	6.20	34.11	29.00	10.68	10.00	36.61	10.40	10.00	2.00
	BREWERS' GRAINS.										
5	Bull,	Farmers Feed Co.,	6.06	28.90	27.20	6.79	6.30	41.46	13.40	15.20	3.39
3	– – –	James Hanley Brewing Co.,	7.77	21.89	20.00	6.71	6.00	42.95	17.09	18.00	3.59
2	– – –	Narragansett Brewing Co.,	7.00	25.33	20.00	7.10	3.00	41.41	15.60	–	3.56
2	Goldnes Kalb,	K. & E. Neumond,	8.08	30.84	24.00	6.62	6.00	39.47	11.68	13.00	3.31
3	– – –	K. & E. Neumond,	7.11	26.40	22.00	7.41	6.00	40.55	14.63	18.00	3.90
4	– – –	Providence Brewing Co.,	7.11	27.88	25.00	5.92	5.00	32.59	12.52	15.00	2.98
2	– – –	Western Grain & Feed Co.,	6.32	31.31	25.00	6.89	5.00	39.92	12.72	16.00	2.84
	YEAST AND VINEGAR GRAINS.										
2	F. M. Co.,	Fleischmann Co.,	6.31	22.50	20.00	7.88	7.00	45.75	15.28	19.00	2.28
5	I. V. M. Co.,	Fleischmann Co.,	6.82	18.97	19.00	6.60	7.00	47.40	17.59	19.00	2.62
	WHEAT MIDDLINGS, RED DOG AND LOW GRADE FLOUR.										
1	Atlas,	Atlas Flour Mills Co.,	9.57	18.60	16.00	4.50	4.00	61.09	3.15	6.00	3.09
1	Red Dog,	Baldwin Flour Mills,	9.83	15.85	17.00	5.05	5.00	62.81	3.59	4.00	2.87
1	Red Dog,	Globe Elevator Co.,	10.03	17.20	13.00	4.88	3.00	60.76	3.75	5.00	3.38
2	Red Dog,	Hecker, Jones, Jewell Milling Co.,	10.45	17.04	16.50	5.09	4.00	59.32	4.77	5.50	3.33
3	XXX Comet Red Dog,	Northwestern Consol. Milling Co.,	9.92	18.13	16.50	5.25	4.00	61.48	2.21	3.00	3.01
3	XX Daisy,	Pillsbury Flour Mills Co.,	9.62	19.21	16.00	5.12	4.00	60.12	2.72	4.00	3.21
2	Red Dog,	St. Albans Grain Co.,	10.37	17.00	15.00	4.29	4.00	62.51	3.20	7.00	2.63
1	Waverly,	Tioga Mill & Elevator Co.,	8.93	16.34	15.00	5.44	4.00	59.41	6.22	8.50	3.66
2	Adrian Red Dog,	Washburn & Crosby Co.,	9.58	18.28	16.00	5.26	4.00	60.09	3.55	4.00	3.24

Complete Average Analysis of Feeds collected (Per Cent.) — Continued.

I. PROTEIN FEEDS — Continued.

Number of Samples.	FEEDSTUFFS.	Name of Manufacturer.	Water.	PROTEIN.		FAT.		Nitrogen Free Extract.	FIBER.		Ash.
				Found.	Guaranteed.	Found.	Guaranteed.		Found.	Guaranteed.	
	WHEAT MIDDLINGS, FLOUR AND STANDARD.										
1	Amco,	Amendt Milling Co.,	9.43	18.09	15.00	5.51	4.75	57.14	5.90	6.00	3.93
3	Standard,	Atlas Flour Mills,	10.36	15.60	13.50	5.33	4.00	54.39	8.99	13.00	5.33
4	Standard,	Cataract City Milling Co.,	10.15	17.35	15.00	5.15	4.50	56.76	6.59	10.00	4.00
1	White,	Cataract City Milling Co.,	9.43	18.91	16.00	5.00	5.00	59.71	3.90	10.00	3.05
2	Commander,	Commander Mills,	10.03	16.91	16.00	5.23	4.50	57.36	6.31	7.00	4.16
3	Wirthmore,	Chas. M. Cox Co.,	9.62	16.51	14.50	4.73	4.00	59.66	5.88	7.00	3.60
1	Granite,	J. G. Davis & Sons,	9.79	18.09	15.00	5.88	4.50	58.43	4.58	10.50	3.23
1	S,	Duluth Superior Mill Co.,	9.66	19.61	16.50	6.13	4.70	55.34	5.32	9.10	3.94
1	–	Eagle Roller Mills Co.,	9.11	15.68	14.00	4.59	4.00	57.09	8.68	11.00	4.85
2	White,	William Hamilton & Sons,	10.36	16.86	15.40	5.07	5.27	61.01	3.50	3.93	3.20
2	H,	Hecker, Jones, Jewell Milling Co.,	9.01	17.37	15.50	5.18	4.75	57.69	6.73	8.00	4.02
1	Carnation,	Kemper Mill & Elevator Co.,	10.91	18.13	16.00	4.38	4.30	56.20	5.91	8.00	4.47
5	Canadian,	Maple Leaf Milling Co.,	9.29	15.39	16.00	5.27	5.50	56.58	8.66	10.00	4.81
3	Rex,	Maple Leaf Milling Co.,	9.82	16.43	16.00	4.50	5.50	59.44	6.06	10.00	3.75
1	Millbourne,	Millbourne Mills,	10.12	15.66	16.00	4.29	4.00	60.40	5.70	4.00	3.83
1	–	Niagara Falls Milling Co.,	9.33	16.90	14.00	5.25	4.00	56.66	6.99	11.00	4.87
1	Flour,	Northwestern Consol. Milling Co.,	9.17	17.86	15.50	6.08	4.50	56.20	6.01	6.00	4.68
6	Standard,	Northwestern Consol. Milling Co.,	9.13	16.39	15.00	5.68	4.50	55.91	8.29	11.00	4.60
3	O,	Ogilvie Flour Mills Co.,	9.26	16.15	15.00	5.16	4.00	57.90	7.33	11.00	4.20
1	A,	Pillsbury Flour Mills Co.,	9.64	18.70	15.00	5.71	4.00	56.81	5.04	8.00	4.10
8	B,	Pillsbury Flour Mills Co.,	9.45	16.26	14.00	5.25	4.00	55.30	8.79	11.00	4.95
1	Rex,	Pillsbury Flour Mills Co.,	9.72	17.97	15.00	4.45	3.50	56.53	6.73	9.00	4.60
2	Standard,	Russell-Miller Milling Co.,	9.70	17.65	15.00	5.72	4.00	55.30	7.27	9.00	4.36
1	Snowball,	Shane Bros. & Wilson Co.,	9.69	18.13	15.00	5.61	4.50	56.00	6.65	7.00	3.92
8	Standard,	Washburn Crosby Co.,	9.36	16.95	14.00	5.39	4.00	56.18	7.60	11.00	4.52
	WHEAT MIXED FEED.										
3	Acme,	Acme Evans Co.,	8.28	15.71	16.00	4.34	4.00	59.34	7.05	9.00	5.28
1	Bailey's,	E. W. Bailey & Co.,	9.96	15.72	15.00	5.00	3.75	56.03	7.62	10.00	5.67
2	–	Christian Breisch & Co.,	10.27	15.00	14.61	4.35	3.63	58.30	7.09	7.06	4.99
13	Wirthmore,	Chas. M. Cox Co.,	8.88	15.89	15.00	4.83	4.50	58.48	7.37	8.00	4.55
8	Boston,	Duluth Superior Milling Co.,	9.29	16.76	16.00	5.52	4.50	56.59	7.41	9.75	4.43
1	E A-CO.,	Everett-Aughenbaugh & Co.,	9.64	18.10	15.00	5.91	3.00	55.06	6.85	12.00	4.44
2	Lucky,	Federal Milling Co.,	8.71	16.59	14.00	4.98	3.00	57.30	7.35	11.00	5.07
3	Garland's,	Garland Milling Co.,	8.93	16.14	15.25	4.34	3.75	57.59	7.53	9.00	5.47
8	Improved Grafton,	Grafton Roller Mills Co.,	9.24	16.65	14.00	5.41	2.70	56.99	7.08	8.40	4.63
1	–	Hecker, Jones, Jewell Milling Co.,	9.70	16.60	14.75	4.94	3.75	56.04	7.84	11.50	4.88
1	Kalispell,	Kalispell Flour Mills Co.,	8.01	15.74	15.00	5.65	3.50	58.30	7.15	8.00	5.15

2	– – –	Larabee Flour Mills Co.,	10.18	16.75	16.00	4.74	4.00	53.89	7.92	8.50	6.52
3	Snow Flake,	Lawrenceburg Roller Mills Co.,	8.61	16.06	15.20	4.36	4.30	57.41	7.91	8.00	5.65
2	Mainspring,	Mennel Milling Co.,	9.27	17.29	15.00	5.36	4.00	55.65	7.69	8.00	4.74
1	Big B,	Moseley & Motley Milling Co.,	7.59	16.42	15.00	5.39	4.00	57.48	8.34	12.00	4.78
4	Planet,	Northwestern Consol. Milling Co.,	8.23	17.40	15.00	5.08	4.00	58.94	5.80	8.00	4.55
3	Fancy,	Pillsbury Flour Mills Co.,	9.31	16.49	14.00	4.55	4.00	59.50	5.87	10.00	4.28
4	Royal,	Royal Milling Co.,	9.62	16.79	15.00	5.05	3.50	56.60	7.39	8.00	4.55
18	Occident,	Russell-Miller Milling Co.,	8.90	16.93	15.00	5.26	4.50	56.60	7.58	10.00	4.73
13	Gold Mine,	Sheffield-King Milling Co.,	9.29	16.57	15.00	5.11	4.50	56.10	8.01	9.90	4.92
8	Try Me,	Sparks Milling Co.,	8.84	16.08	16.00	4.41	3.50	58.10	7.35	9.00	5.22
1	– – –	Stanard-Tilton Milling Co.,	8.78	16.29	14.50	4.96	4.00	56.24	8.30	8.00	5.43
1	Honest,	David Stott Flour Mills,	10.37	15.06	14.50	4.82	4.00	57.99	7.09	8.00	4.67
2	T & C,	Thornton & Chester Milling Co.,	9.15	16.66	14.00	5.96	4.50	55.35	8.26	11.00	4.62
3	– – –	Waggoner-Gates Milling Co.,	8.47	17.07	15.00	4.62	4.00	56.35	7.78	10.00	5.71
1	– – –	C. P. Washburn,	9.45	17.08	15.00	5.16	3.50	56.52	7.22	10.00	4.57
2	– – –	Washburn & Crosby Co.,	10.01	16.77	14.00	5.07	4.00	57.65	6.34	10.00	4.16
2	Blue Seal,	H. K. Webster Co.,	8.88	16.42	16.00	4.79	4.00	56.91	8.09	7.00	4.91
2	Webster,	Webster Mill Co.,	9.68	16.54	15.30	5.34	4.80	56.12	7.87	10.40	4.45
1	Kent,	Williams Bros. Co.,	10.17	15.06	12.00	4.42	3.00	59.80	6.07	8.00	4.48
	WHEAT BRAN.										
3	Jersey,	Geo. C. Christian,	8.29	15.40	13.00	4.95	4.00	56.13	9.53	13.00	5.70
3	Commander,	Commander Mill Co.,	9.11	14.36	14.00	4.52	4.00	55.79	10.34	11.00	5.88
1	Granite,	J. G. Davis Co.,	8.62	15.98	13.00	5.47	3.00	55.49	9.09	12.00	5.35
1	– – –	Duluth Universal Milling Co.,	9.12	15.09	13.80	5.09	4.10	56.08	9.08	12.70	5.54
3	Lucky,	Federal Milling Co.,	8.50	16.71	13.00	5.56	2.50	54.75	9.15	14.00	5.33
1	Grafton,	Grafton Roller Mills Co.,	8.77	15.76	15.04	5.24	3.50	55.61	8.40	10.80	6.22
1	– – –	William Hamilton & Son,	9.46	15.02	13.15	3.78	2.43	57.87	8.23	10.25	5.64
3	– – –	Hecker, Jones, Jewell Milling Co.,	8.47	16.40	13.75	5.16	3.00	54.99	9.52	12.50	5.46
1	– – –	Hunter, Robinson, Wenz Milling Co.,	8.69	15.98	15.50	4.26	4.00	53.52	10.88	11.00	6.67
3	– – –	W. J. Jennison Co.,	8.64	15.51	14.00	4.23	4.00	56.03	9.76	12.00	5.83
2	Anchor,	Kemper Mill & Elevator Co.,	9.16	16.87	14.50	4.24	4.00	55.21	8.25	10.00	6.27
1	– – –	Maney Milling Co.,	7.79	16.03	14.00	4.63	4.25	57.96	7.62	10.50	5.97
8	– – –	Maple Leaf Milling Co.,	8.92	16.14	15.50	5.12	4.50	56.54	8.38	12.00	4.90
1	– – –	National Feed Co.,	8.19	14.14	14.50	3.51	4.00	59.47	8.56	10.00	6.13
1	Powerful,	New England Flour Co.,	8.69	16.15	13.00	5.65	3.00	55.82	8.96	13.00	4.73
2	Seal of Minnesota,	New Prague Flouring Mill Co.,	8.85	15.53	13.30	4.93	3.00	55.80	9.41	11.25	5.48
1	– – –	Niagara Grain & Feed Co.,	8.94	15.94	14.50	5.06	4.00	56.10	8.57	11.00	5.39
1	– – –	Niagara Falls Milling Co.,	8.48	17.90	12.00	5.46	3.00	53.90	8.84	13.00	5.42
10	– – –	Northwestern Consol. Milling Co.,	8.93	15.55	14.50	5.09	4.00	54.30	9.83	11.00	6.30
9	O,	Ogilvie Flour Mills Co.,	8.96	15.03	13.00	5.48	4.00	55.12	9.83	15.00	5.58
1	Pillsbury's,	Pillsbury Flour Mills Co.,	8.47	14.89	13.00	4.33	4.00	55.79	9.98	13.00	6.54
5	Quaker City,	Quaker City Mills Co.,	8.65	15.32	13.00	4.05	3.00	57.18	8.68	10.00	6.12
1	Bixota,	Red Wing Milling Co.,	8.10	14.01	14.00	5.18	4.80	55.19	11.38	13.20	6.14
3	Homo,	St. Paul Milling Co.,	8.67	15.09	14.00	4.82	4.00	55.97	9.68	12.00	5.77
1	Security,	Security Flour Mills Co.,	8.42	17.08	14.50	4.14	3.50	54.77	9.26	10.00	6.33
1	Star & Crescent,	Star & Crescent Milling Co.,	9.29	15.06	15.00	4.74	4.00	54.89	9.51	10.00	6.51
2	Angelus,	Thompson Milling Co.,	8.73	16.33	13.00	5.63	4.00	54.25	9.13	14.00	5.93
1	– – –	Updike Milling Co.,	8.57	14.89	13.00	4.96	3.00	56.67	8.86	13.00	6.05
6	– – –	Washburn Crosby Co.,	8.63	15.13	13.00	4.92	4.00	55.51	9.69	13.00	6.12
4	Black Hawk,	Western Flour Mills Co.,	9.35	16.03	13.30	4.93	3.00	55.57	8.30	11.25	5.82
2	Star,	Western Star Mill Co.,	8.09	17.83	15.00	4.41	3.50	55.40	8.05	11.00	6.22

Complete Average Analysis of Feeds collected (Per Cent.) — Continued.

I. PROTEIN FEEDS — Concluded.

Number of Samples.	FEEDSTUFFS.	Name of Manufacturer.	Water.	PROTEIN.		FAT.		Nitrogen Free Extract.	FIBER.		Ash.
				Found.	Guaranteed.	Found.	Guaranteed.		Found.	Guaranteed.	
	DURUM WHEAT PRODUCTS.										
1	Standard middlings,	Pillsbury Flour Mills Co.,	10.80	16.29	12.50	6.37	4.00	52.15	9.95	11.00	4.44
1	Nokomis middlings,	Yerxa, Andrews & Thurston,	8.88	16.77	14.50	4.61	5.50	60.86	4.88	10.50	4.00
1	St. Paul Queen mixed feed,	Capitol City Milling & Grain Co.,	9.78	15.85	13.60	5.44	3.70	60.05	5.44	9.10	3.44
2	Bran,	Pillsbury Flour Mills Co.,	8.76	12.53	11.00	5.15	4.00	55.08	13.57	14.00	4.91
	WHEAT FEEDS WITH ADMIXTURES.										
1	Wheat middlings with 25 per cent. rye middlings,	Eastern Grain Co.,	11.48	16.64	12.00	4.35	4.00	57.84	5.37	12.00	4.32
6	Buckeye (wheat and rye feeds),	Quaker Oats Co.,	8.39	16.45	15.50	5.25	4.50	56.03	8.43	8.50	5.45
	DAIRY FEEDS (MORE THAN 15 PER CENT. PROTEIN).										
1	Amco Dairy Feed,	American Milling Co.,	6.69	26.44	25.00	6.15	8.00	43.06	12.75	16.00	4.91
1	Buffalo Creamery Feed,	Buffalo Cereal Co.,	7.82	19.04	18.00	4.83	4.00	51.86	11.61	13.00	4.84
7	Unicorn Dairy Ration,	Chapin & Co.,	7.50	27.04	26.00	5.65	5.50	45.72	9.11	11.00	4.98
1	1917 Dairy Ration,	E. A. Cowee Co.,	8.56	25.18	22.00	4.60	4.00	48.47	8.34	9.00	4.85
5	Wirthmore Balanced Ration,	Chas. M. Cox Co.,	8.17	25.27	25.00	4.41	5.00	47.88	9.76	9.50	4.51
1	Nulife Dairy Feed,	Fred L. Cressey,	8.28	21.26	20.00	4.52	4.00	48.88	11.14	12.00	5.92
3	Crosby's Ready Ration,	E. Crosby & Co.,	7.53	27.66	25.00	7.70	7.00	42.08	10.34	9.00	4.69
2	Economic Dairy Feed,	Economic Feed Co.,	8.04	24.05	23.00	6.67	5.00	42.32	13.29	16.00	5.63
1	Economic Velva Dairy Feed,	Economic Feed Co.,	9.20	19.70	18.00	7.00	5.00	45.38	13.75	16.00	4.97
6	Elmore Milk Grains,	Elmore Milling Co.,	7.84	26.72	25.00	5.78	6.00	45.29	9.76	10.00	4.61
1	Royal Worcester Ration,	J. B. Garland & Sons,	9.37	27.62	20.00	5.42	3.00	46.52	6.85	12.00	4.22
1	Red Horn Dairy Feed,	Hales & Edwards Co.,	7.95	26.88	25.00	4.31	4.00	44.27	11.70	15.00	4.89
2	Algrane Milk Feed,	H-O Co.,	8.15	15.79	14.00	4.01	4.00	55.66	11.80	15.00	4.59
3	Krause Dairy Feed,	Chas. A. Krause Milling Co.,	7.67	24.87	24.00	5.60	5.00	45.09	11.65	10.00	5.12
3	Big 6 Dairy Feed,	Larrowe Milling Co.,	8.89	21.21	21.00	5.89	4.00	50.00	8.87	12.00	5.14
17	Larro Feed,	Larrowe Milling Co.,	8.33	20.46	20.00	4.17	3.00	50.88	11.38	14.00	4.78
1	Mingo Dairy Feed,	Larrowe Milling Co.,	8.41	26.71	25.00	4.50	4.00	43.92	11.63	12.00	4.83
1	Bull Brand Dairy Ration,	Maritime Trading Corp.,	9.30	23.56	24.00	6.09	5.00	45.44	10.55	12.00	5.06
1	Domino Creamery Feed,	Nowak Milling Corp.,	7.53	21.45	22.00	6.97	4.00	45.15	12.89	14.00	6.01
8	Stevens 44 Dairy Ration,	Oswego Milling Co.,	8.03	25.28	24.00	5.48	5.00	45.40	11.13	14.00	4.68
14	Purina Cow Chow,	Purina Mills,	12.39	25.17	24.00	3.93	4.50	39.06	13.53	13.50	5.92
7	Big Q Dairy Ration,	Quaker Oats Co.,	8.06	22.34	21.00	5.57	6.00	47.90	10.59	10.50	5.54
2	Blue Ribbon Dairy Feed,	Quaker Oats Co.,	9.33	22.97	25.00	6.69	5.00	43.35	12.60	14.00	5.06
2	Ropes Horse Feed,	Ropes Bros.,	7.84	17.51	16.00	5.09	5.00	51.33	12.87	9.50	5.36
2	Syragold Milk Ration,	Syracuse Milling Co.,	8.72	22.84	20.00	4.44	4.50	44.05	15.62	15.00	4.33
1	Big 3 Quality Feed,	Stanley, Harlow, Hamlin Inc.,	4.88	22.57	25.00	9.20	10.00	45.10	16.21	16.00	2.04
9	Red Brand Tioga Dairy Feed,	Tioga Mill & Elevator Co.,	9.11	25.34	23.00	5.64	3.50	45.68	9.24	11.00	4.99
10	Union Grains,	Ubiko Milling Co.,	7.46	25.03	24.00	6.38	7.00	45.78	10.25	10.00	5.10

	MOLASSES FEEDS (CONTAINING OVER 15 PER CENT. PROTEIN).										
4	Sucrene Dairy Feed,	American Milling Co.,	9.85	18.87	16.50	4.77	3.50	44.55	13.65	14.00	8.31
3	Arcady Dairy Feed,	Arcady Farms Milling Co.,	11.61	17.03	16.00	4.28	3.50	45.74	13.54	15.00	7.80
4	Cloverleaf Dairy Feed,	Cloverleaf Milling Co.,	11.87	15.73	13.50	5.02	3.50	43.69	14.08	15.00	9.61
1	Corno Dairy Feed,	Corno Mills Co.,	12.44	17.78	15.00	3.66	3.50	46.39	14.36	15.00	5.27
1	Economic Horse & Dairy Feed,	Economic Feed Co.,	11.87	22.56	20.00	5.61	5.00	42.11	11.67	14.00	6.18
1	Golden Flake Dairy Feed,	Hales & Edwards Co.,	14.17	19.07	16.00	2.44	3.50	44.16	12.40	15.00	7.76
1	Int. Special Dairy Feed,	International Sugar Feed Co.,	12.00	16.16	15.00	3.82	4.50	44.08	14.75	15.00	9.19
1	Purina Dairy Feed,	Purina Mills,	11.71	21.95	20.00	3.31	3.00	46.67	13.18	16.50	7.18
4	Quaker Dairy Feed,	Quaker Oats Co.,	14.52	16.13	16.00	3.82	5.50	44.53	14.16	16.00	6.84
3	Hammond Dairy Feed,	Western Grain Products Co.,	11.83	15.39	16.50	4.29	3.50	44.91	13.60	12.00	9.98
	MISCELLANEOUS PROTEIN FEEDS.										
1	Velvet Bean Feed,	The Farmers Coop. Warehouse & Gin Co.,	11.07	17.51	17.50	3.40	4.00	51.72	12.19	15.00	4.11
2	Velvet Bean Feed,	Humphreys-Godwin Co.,	11.83	17.27	12.00	4.06	4.00	50.59	12.38	15.00	3.87
2	Jesco Velvet Bean Feed,	J. E. Soper Co.,	11.78	16.44	17.00	5.18	4.00	50.62	12.80	13.00	3.18
2	Diamond Hog Meal,	Corn Products Refining Co.,	8.88	19.26	18.00	12.37	7.00	49.33	8.60	13.00	1.56
1	E. G. Co. Pig Growing Feed,	Eastern Grain Co.,	10.33	15.33	12.00	5.05	3.00	55.44	9.42	12.00	4.43
2	Go-Tu-It Hog Ration,	Park & Pollard Co.,	10.16	19.09	15.00	6.99	6.00	49.10	8.39	13.00	6.27
2	Purina Pig Chow,	Purina Mills,	12.47	15.89	14.00	4.46	3.20	48.54	10.89	9.00	7.75
1	Pioneer Hog Feed (Buttermilk),	Hales & Edwards Co.,	10.88	13.42	12.00	4.70	3.00	57.88	8.56	12.00	4.56
	RYE FEEDS.										
6	Rye Feed,	Boutwell Milling & Grain Co.,	10.64	16.10	13.50	3.34	3.00	61.82	4.44	6.00	3.66
1	Rye Middlings,	Eagle Roller Mills Co.,	10.21	15.55	15.00	4.00	3.50	59.11	6.88	11.00	4.25
4	Rye Feed,	Hecker, Jones, Jewell Milling Co.,	10.19	17.13	15.00	3.32	2.50	60.71	4.84	5.50	3.81
2	Rye Feed,	Kehlors Flour Mills Co.,	10.88	16.58	16.00	3.55	3.00	59.37	5.28	5.25	4.34
1	Rye Middlings,	Pillsbury Flour Mills Co.,	9.35	15.50	15.00	3.73	3.50	60.11	6.64	9.00	4.67
1	Rye Feed,	Quaker City Flour Mills Co.,	11.15	16.81	15.00	3.69	3.75	58.65	5.43	12.00	4.27
1	Rye Feed,	Van Vechten Milling Co.,	11.03	15.94	13.00	2.96	2.00	63.03	3.77	10.00	3.27
4	Rye Middlings,	Washburn & Crosby Co.,	11.03	16.55	14.00	3.57	3.00	58.95	5.44	6.00	4.46
	CALF MEALS.										
5	Blatchfords,	Blatchfords Calf Meal Factory,	9.55	25.54	24.00	6.62	5.00	46.63	6.75	6.75	4.91
1	Purina Calf Chow,	Purina Mills,	10.45	33.60	33.00	3.59	4.00	46.28	3.19	3.50	2.89
3	Ryde's Cream Calf Meal,	Ryde & Co.,	10.01	26.37	25.00	5.64	5.00	44.87	7.43	6.00	5.68

Complete Average Analysis of Feeds collected (Per Cent.) — Continued.

II. STARCHY (CARBOHYDRATE) FEEDS.

Number of Samples.	FEEDSTUFFS.	Name of Manufacturer.	Water.	PROTEIN.		FAT.		Nitrogen Free Extract.	FIBER.		Ash.
				Found.	Guaranteed.	Found.	Guaranteed.		Found.	Guaranteed.	
	CORN MEAL.										
26	All samples,	– – –	12.28	9.31	–	3.56	–	71.51	1.96	–	1.38
	CORN FEED MEAL.										
1	Amco,	Amendt Milling Co.,	10.76	10.51	8.50	7.80	2.50	61.63	6.70	6.50	2.60
1	– – –	Arkadelphia Milling Co.,	9.14	10.99	9.00	8.85	7.00	59.38	8.68	8.00	2.96
1	– – –	Eagle Roller Mills Co.,	9.88	10.16	10.00	4.82	4.00	65.79	7.20	6.07	2.15
1	– – –	Heffner Milling Co.,	10.98	12.08	–	10.49	–	60.03	2.88	–	3.54
1	Yellow,	Russell Miller Milling Co.,	6.96	11.73	10.00	10.30	10.00	62.01	6.40	12.00	2.60
1	White,	Russell Miller Milling Co.,	8.94	11.47	10.00	10.70	10.00	59.47	6.53	12.00	2.89
2	– – –	Washburn Crosby Co.,	10.20	10.59	8.00	7.78	5.00	62.35	6.75	10.00	2.33
	OTHER CEREAL MEALS.										
1	Barley Meal,	W. N. Potters Sons & Co.,	10.09	12.08	–	2.56	–	67.91	4.82	–	2.54
3	Ground Oats,	All samples,	8.75	11.30	–	4.91	–	61.56	10.15	–	3.33
1	Rye meal,	H. G. Hill Co.,	11.14	10.33	–	1.92	–	72.62	2.08	–	1.91
1	Wheat meal,	H. G. Hill Co.,	12.22	12.08	–	2.23	–	69.72	2.28	–	1.47
	HOMINY FEED.										
3	Homco,	American Hominy Co.,	8.68	10.38	10.00	7.55	6.00	66.15	4.78	7.00	2.46
14	Spring Garden,	Baltimore Pearl Hominy Co.,	8.81	11.55	10.00	7.06	6.00	64.73	4.83	6.00	3.02
1	Blairs,	Blair Milling Co.,	10.60	10.33	9.00	6.78	6.50	66.17	3.85	7.00	2.27
3	Bufceco,	Buffalo Cereal Co.,	8.90	11.47	10.00	6.57	6.00	65.78	4.38	5.00	2.90
7	Paragon,	Chas. M. Cox Co.,	8.61	11.58	9.50	8.14	7.50	63.67	5.07	7.00	2.93
2	– – –	Donahue-Stratton Co.,	10.29	10.10	10.00	6.89	7.00	66.86	3.39	7.00	2.47
1	Badger,	Chas. A. Krause Milling Co.,	9.46	11.82	10.00	7.40	6.00	63.89	4.28	5.00	3.15
12	– – –	Miner-Hillard Milling Co.,	9.19	10.90	10.00	6.94	5.00	66.39	3.87	5.00	2.71
2	Mystic,	Mystic Milling Co.,	10.33	10.59	11.00	5.26	6.50	68.28	3.73	5.00	1.81
2	– – –	National Feed Co.,	10.15	10.40	10.50	8.36	8.50	65.08	3.47	10.00	2.54
8	– – –	Patent Cereals Co.,	9.22	11.24	10.00	5.42	6.00	66.80	4.66	5.00	2.66
1	Yellow,	Plymouth Milling Co.,	8.34	11.52	10.00	9.93	6.50	58.81	5.17	–	6.23
2	Yellow,	Quaker Oats Co.,	9.70	11.42	9.00	5.93	4.00	66.68	3.84	4.00	2.43
3	Blue Ribbon,	J. E. Soper Co.,	9.10	11.46	10.00	5.71	6.00	65.85	5.04	5.00	2.84
1	Logan,	Standard Cereal Co.,	11.40	9.63	9.00	6.66	7.00	66.61	3.56	6.00	2.14
	PROVENDER (CORN AND OATS).										
2	Bryant Steam Cooked Horse Feed,	J. J. Badenoch Co.,	9.61	10.49	8.75	4.33	2.50	67.14	5.87	8.00	2.56
1	– – –	Buffalo Cereal Co.,	8.75	10.47	9.00	5.65	4.00	65.16	7.20	4.00	2.77
2	Imperial Steam Cooked Feed,	Imperial Grain & Milling Co.,	9.54	10.94	9.50	5.23	4.00	65.93	5.92	4.00	2.44

	STOCK AND HORSE FEEDS.										
2	Acme Stock Feed,	Acme-Evans Co.,	10.02	8.07	8.50	4.07	3.25	59.97	14.03	13.00	3.84
1	Pennant Stock Feed,	E. W. Bailey & Co.,	9.70	8.32	10.00	5.08	6.50	63.85	9.89	10.00	3.16
7	Spring Garden Horse Feed,	Baltimore Pearl Hominy Co.,	9.16	11.89	12.00	6.84	5.00	62.35	6.49	10.00	3.27
6	Bufceco Chop Feed,	Buffalo Cereal Co.,	8.58	11.40	11.00	4.52	4.00	61.39	10.38	9.00	3.73
3	Bufceco Stock Feed,	Buffalo Cereal Co.,	8.42	11.14	10.00	4.44	5.00	61.31	10.57	10.00	4.12
1	Clover Leaf Stock Feed,	Cloverleaf Milling Co.,	8.78	9.98	10.00	5.67	4.00	59.42	11.80	12.00	4.35
1	Corno Stock Feed,	Corno Mills Co.,	6.97	10.07	9.00	4.68	4.50	62.47	11.85	12.75	3.96
1	Climax Stock Feed,	E. A. Cowee Co.,	9.48	9.37	8.75	4.62	3.50	60.98	11.92	8.00	3.63
3	Charlestock Feed,	Chas. M. Cox Co.,	6.95	8.55	6.00	5.49	3.00	60.26	14.58	16.00	4.17
15	Wirthmore Stock Feed,	Chas. M. Cox Co.,	8.32	10.29	9.00	6.42	4.00	61.97	9.36	9.50	3.64
1	Marathon Stock Feed,	Fred L. Cressey,	8.05	11.29	7.00	4.00	3.00	55.91	14.20	12.00	6.55
1	Crosby Stock Feed,	E. Crosby & Co.,	8.08	9.94	9.00	5.10	4.00	61.95	11.45	10.00	3.48
4	Quality Stock Feed,	J. Cushing & Co.,	8.51	10.77	9.00	7.34	6.00	61.87	8.12	9.00	3.39
1	Deweys Stock Feed,	Dewey Bros. Co.,	9.47	10.57	11.00	3.68	3.50	58.85	13.04	12.00	4.39
3	Eastern Stock Feed,	Eastern Grain Co.,	8.26	10.22	9.00	6.49	4.00	65.33	6.71	9.50	2.99
1	Stock Feed,	John W. Eshelman,	8.28	11.56	10.00	4.77	3.00	59.20	11.62	9.00	4.57
4	Red Tag A Chop Feed,	J. B. Garland & Son,	8.40	11.79	7.00	4.66	3.00	59.97	10.82	14.00	4.36
2	Red Tag B Chop Feed,	J. B. Garland & Son,	8.99	9.92	7.00	4.03	3.00	57.68	14.51	16.00	4.87
4	Grandin's Stock Feed,	D. H. Grandin Milling Co.,	7.86	10.58	9.00	6.20	5.00	59.92	11.59	14.00	3.85
4	Haskell's Stock Feed,	W. H. Haskell & Co.,	7.97	9.99	9.00	7.71	6.00	60.78	9.69	9.00	3.86
2	Algrane Horse Feed,	H-O Co.,	9.06	11.69	11.00	4.16	4.00	59.79	10.42	10.00	4.88
2	New England Stock Feed,	H-O Co.,	8.60	10.35	9.00	5.50	4.00	60.31	10.69	10.00	4.55
6	Lucky Strike Stock Feed,	Illinois Feed Mills,	7.64	12.68	12.00	3.37	3.00	53.53	17.61	20.00	5.17
5	Badger Stock Feed,	Chas. A. Krause Milling Co.,	7.84	9.30	10.00	4.76	4.50	59.73	13.89	12.00	4.48
2	Krause Stock Feed,	Chas. A. Krause Milling Co.,	7.68	8.54	10.00	5.03	4.50	63.67	11.26	12.00	3.82
2	Mystic Feed,	Mystic Milling Co.,	9.85	9.09	9.00	2.39	3.00	63.54	12.12	10.00	3.01
1	Fidelity Horse Feed,	Nowak Milling Corp.,	8.07	9.11	7.00	4.26	3.00	61.36	13.02	14.00	4.18
2	Domino Stock Feed,	Nowak Milling Corp.,	7.14	9.35	9.00	5.11	3.00	62.62	11.49	12.00	4.29
5	Stock Feed,	Park & Pollard Co.,	8.27	8.99	9.00	4.66	1.50	61.99	12.15	12.00	3.94
7	Iowa Stock Feed,	Purity Oats Co.,	8.55	10.81	10.00	4.82	4.00	60.37	11.21	12.75	4.24
12	Schumacher Feed,	Quaker Oats Co.,	8.79	11.85	10.00	4.27	3.25	59.23	10.96	10.00	4.90
1	Schumacher Special Horse Feed,	Quaker Oats Co.,	8.72	10.12	8.25	3.26	3.25	66.93	6.91	8.35	4.06
1	Victor Feed,	Quaker Oats Co.,	9.70	8.58	8.00	3.81	3.00	63.27	11.30	12.00	3.34
1	Emergency Horse Feed,	St. Albans Grain Co.,	8.89	10.59	9.00	4.68	4.00	60.24	11.88	10.50	3.72
2	Syragold Stock Feed,	Syracuse Milling Co.,	8.14	11.10	10.00	4.34	3.00	59.03	12.94	13.00	4.45
1	Derby Stock Feed,	Tioga Mill & Elevator Co.,	5.33	13.83	10.50	4.49	4.00	61.97	10.55	13.25	3.83
2	Blue Seal Stock Feed,	H. K. Webster Co.,	7.47	10.67	10.00	5.49	4.00	61.96	10.38	8.00	4.03
	MOLASSES FEEDS (LESS THAN 15 PER CENT. PROTEIN).										
1	Leader Horse and Mule Feed,	Alfocorn Milling Co.,	14.31	9.75	8.00	1.70	1.50	54.82	12.83	15.00	6.59
1	Sweet Meal,	Alfocorn Milling Co.,	14.06	12.38	10.00	0.98	1.00	47.09	17.22	20.00	8.27
1	Kick-A-Poo Horse Feed,	American Milling Co.,	12.25	10.41	10.00	3.93	3.00	55.15	13.12	12.00	5.14
1	Peoria Horse Feed,	American Milling Co.,	10.00	9.57	10.00	3.32	2.50	58.85	13.65	14.00	4.61
3	Arcady Dairy Feed,	Arcady Farms Milling Co.,	11.60	14.24	16.00	2.96	3.50	57.26	13.94	15.00	9.51
1	Iroquois Horse Feed,	Buffalo Cereal Co.,	13.20	11.25	9.00	2.87	2.00	58.09	10.55	11.00	4.04
1	Lactola Dairy Feed,	Chapin & Co.,	10.07	14.05	16.50	2.68	3.00	52.29	8.00	12.00	12.91
1	Cloverleaf Dairy Feed,	Cloverleaf Milling Co.,	9.27	14.80	13.50	4.34	3.50	45.92	15.65	15.00	10.02
1	Peerless Horse Feed,	Cloverleaf Milling Co.,	14.26	12.76	9.00	1.90	1.50	48.98	14.20	14.00	7.90

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[1] Misbranded hominy feed.

Complete Average Analysis of Feeds collected (Per Cent.) — Concluded.

II. STARCHY (CARBOHYDRATE) FEEDS — Concluded.

Number of Samples.	FEEDSTUFFS.	Name of Manufacturer.	Water.	PROTEIN.		FAT.		Nitrogen Free Extract.	FIBER.		Ash.
				Found.	Guaranteed.	Found.	Guaranteed.		Found.	Guaranteed.	
	MOLASSES FEEDS (LESS THAN 15 PER CENT. PROTEIN) — Con.										
1	Corno Sweet Feed,	Corno Mills Co.,	16.01	11.48	10.00	2.06	2.50	53.05	11.94	15.00	5.46
1	Hobby Horse Feed,	Albert Dickinson Co.,	12.98	11.53	9.00	2.37	1.50	54.13	13.34	15.00	5.65
1	Kingfalfa Horse Feed,	Feed Products Milling Co.,	14.18	11.06	10.00	2.02	2.00	57.42	11.85	15.00	3.47
1	Heavy Grain Horse and Mule Feed,	Kornfalfa Feed Milling Co.,	13.54	11.08	9.00	2.98	3.00	55.61	12.04	12.00	4.75
1	Badger Horse Feed,	Chas. A. Krause Milling Co.,	16.80	10.81	10.00	2.23	2.00	52.08	11.11	12.00	6.97
3	Crescent Horse Feed,	Chas. A. Krause Milling Co.,	14.71	10.35	10.00	2.00	1.50	53.24	13.52	16.00	6.18
3	Domino Vim-O-Lene,	Nowak Milling Corp.,	14.01	10.70	8.00	4.02	2.00	60.49	6.93	9.00	3.85
1	Green Meadow Dairy Feed,	Omaha Alfalfa Milling Co.,	17.05	12.69	11.00	0.93	1.00	41.35	19.16	25.00	8.82
5	Peerless Horse Feed,	Omaha Alfalfa Milling Co.,	16.80	11.79	10.00	1.90	2.00	51.38	11.62	12.00	6.51
1	Horse Feed,	Park & Pollard Co.,	15.28	10.63	9.00	2.24	1.50	54.30	11.73	12.00	5.82
2	Emerald Horse Feed,	Pairie State Milling Co.,	14.65	11.10	10.00	1.56	2.00	52.45	14.25	12.00	5.99
1	Purina Feed,	Purina Mills,	14.01	10.56	9.30	2.57	1.70	54.32	13.32	13.00	5.22
2	Protena Horse Feed,	Purina Mills,	13.47	11.06	9.00	2.37	1.50	51.25	15.01	15.00	6.84
3	Purina-O-Molene,	Purina Mills,	15.44	10.00	9.70	4.15	3.20	58.00	8.65	8.00	3.76
1	Purina Sweet Feed,	Purina Mills,	13.90	11.05	8.00	0.88	1.00	44.72	20.20	20.00	9.25
4	Green Cross Horse Feed,	Quaker Oats Co.,	13.64	10.78	10.00	2.37	2.50	55.02	12.97	12.00	5.22
3	Colonel's Ration,	Tioga Mill & Elevator Co.,	13.20	13.93	12.00	3.43	2.50	51.08	11.74	15.00	6.62
	MISCELLANEOUS STARCHY FEEDS.										
1	Barley Feed,	Bay State Milling Co.,	9.26	11.82	8.00	2.96	3.00	57.05	13.69	22.00	5.22
2	Barley Feed,	Grafton Roller Mills Co.,	9.28	11.03	8.00	3.24	3.00	58.58	12.89	22.00	4.98
1	Barley Feed,	Pillsbury Flour Mills Co.,	9.17	10.94	9.00	3.44	3.00	56.20	14.92	18.00	5.33
1	Criterion Barley Feed,	Sheffield King Milling Co.,	13.74	10.29	8.00	3.45	3.00	51.13	14.28	22.00	7.11
2	Barley Feed,	E. S. Woodworth & Co.,	8.90	9.42	6.00	3.02	2.00	55.59	16.63	25.00	6.44
6	Barley Feed,	Washburn Crosby Co.,	9.63	10.08	6.00	2.96	1.00	55.63	16.13	25.00	5.57
4	Barley Feed,	Unidentified samples,	8.85	10.47	-	2.95	-	56.85	15.39	-	5.49
8	Dried Beet Pulp,	Larrowe Milling Co.,	8.74	9.83	8.00	0.78	0.50	59.60	18.12	20.00	2.93
11	Oat Feed,	All samples,	6.84	6.25	-	2.74	-	53.11	24.81	-	6.25
3	Diamond Dairy Feed,	Viehman Grain Co.,	8.92	12.83	8.00	7.28	4.00	45.94	17.20	22.00	7.83
1	Holstein Feed,	Indiana Milling Co.,	8.42	11.26	12.00	4.12	3.00	54.61	17.09	16.00	4.50
5	Blue Grass Valley Feed,	A. Waller & Co.,	8.49	9.46	9.00	2.97	2.00	60.61	14.88	17.00	3.59

III. POULTRY FEEDS.

Number of Samples.	FEEDSTUFFS.	Name of Manufacturer.	Water.	PROTEIN. Found.	PROTEIN. Guaranteed.	FAT. Found.	FAT. Guaranteed.	Nitrogen Free Extract.	FIBER. Found.	FIBER. Guaranteed.	Ash.
	LEGUME HAYS.										
2	Cut clover,	All samples,	7.41	11.27	-	2.25	-	46.47	26.66	-	5.94
11	Alfalfa meal,	All samples,	7.56	16.71	-	2.02	-	40.53	24.37	-	8.81

	MASHES AND MEALS.										
1	Meat Mash,	Ames Plow Co.,	7.31	11.91	12.00	3.98	3.00	50.15	7.85	7.00	18.80
1	Sucrene Poultry Mash,	American Milling Co.,	9.31	19.00	18.00	4.37	3.50	54.40	7.38	12.00	5.54
1	Fill the Basket Egg Mash,	Blatchfords Calf Meal Factory,	9.40	19.44	19.00	4.96	4.00	43.74	8.84	10.00	13.62
1	Blatchfords Milk Mash,	Blatchfords Calf Meal Factory,	7.00	22.07	20.00	5.76	4.00	46.03	6.75	7.50	12.39
1	Brecks Mash Food,	J. Breck & Sons Corp.,	9.76	14.98	11.50	4.46	3.50	57.93	6.55	10.00	6.32
1	Meat Mash,	Butman & Cressey Co.,	8.68	21.24	14.50	5.96	5.00	45.97	8.29	8.00	9.86
1	Bufceco Laying Mash,	Buffalo Cereal Co.,	8.73	20.25	20.00	6.47	5.00	49.83	7.37	8.00	7.35
1	Bufceco Poultry Mash,	Buffalo Cereal Co.,	9.00	16.15	15.00	5.60	4.00	62.04	4.32	4.00	2.89
1	Conkey's Buttermilk Starting Food,	G. E. Conkey Co.,	9.95	12.69	12.00	4.30	3.00	64.21	4.15	4.00	4.70
4	Wirthmore Fish & Scrap Mash Feed,	Chas. M. Cox Co.,	8.67	21.22	20.00	4.87	4.00	50.09	6.55	8.50	8.60
3	Wirthmore Growing Feed with Scraps,	Chas. M. Cox Co.,	9.22	14.75	15.00	4.88	4.50	60.08	5.65	4.50	5.42
1	Wirthmore Mash Feed, all grain,	Chas. M. Cox Co.,	8.68	17.08	12.00	3.75	3.00	58.98	7.22	8.50	4.29
1	Egg Mash,	E. Crosby & Co.,	9.93	16.20	16.00	4.08	3.00	57.45	7.70	10.00	4.64
2	Laying Mash,	John W. Eshelman,	8.81	23.26	20.00	5.74	5.00	46.16	6.30	7.00	9.73
2	Poultry Mash,	J. B. Garland & Son,	9.53	23.08	23.00	5.20	4.00	47.93	7.15	8.00	7.11
1	Buttermilk Growing Feed,	Green Chicken Feed Co.,	8.17	15.68	12.00	5.41	3.00	48.56	7.68	5.00	14.50
1	Meat Mash,	Green Chicken Feed Co.,	8.26	12.82	12.00	4.01	3.00	53.17	4.35	7.00	17.39
1	First Feed for Chicks,	Green Chicken Feed Co.,	7.62	18.52	17.00	6.18	3.00	49.52	5.61	5.00	12.55
2	Red Comb Crate Fattener,	Hales & Edwards Co.,	10.17	14.10	12.00	4.64	4.00	64.66	3.50	8.00	2.93
1	Red Comb Meat Mash,	Hales & Edwards Co.,	9.60	16.58	15.00	4.62	4.00	56.05	5.65	10.00	7.50
1	H-O Poultry Feed,	H-O Co.,	9.46	16.60	17.00	4.97	4.50	59.47	6.13	9.00	3.37
3	H-O Dry Poultry Mash,	H-O Co.,	8.55	18.66	18.00	4.06	3.50	56.01	9.80	11.00	3.48
2	Dry Mash,	Mansfield Milling Co.,	7.93	24.41	22.00	5.67	6.00	46.79	6.75	7.00	8.45
1	M. & S. Dry Mash,	Meech & Stoddard Inc.,	7.42	18.19	12.00	4.22	3.00	53.76	6.14	9.00	10.27
2	Mystic Lay Mash,	Mystic Milling Co.,	9.32	27.02	23.00	3.97	4.00	47.62	6.43	8.00	5.64
1	Growing Feed,	Park & Pollard Co.,	7.42	16.29	10.00	4.27	1.50	54.82	7.81	8.00	9.39
1	Lay or Bust Dry Mash,	Park & Pollard Co.,	8.12	19.09	18.00	5.23	1.50	49.04	8.24	12.00	10.28
1	Pratts Baby Chick Feed,	Pratt Food Co.,	9.12	13.93	11.50	5.12	3.50	59.84	2.96	3.80	9.03
1	Tom Boy Poultry Mash,	Purity Oats Co.,	8.06	15.45	15.00	5.49	4.00	56.82	6.73	10.00	7.45
2	Ful-O-Pep Dry Mash,	Quaker Oats Co.,	8.93	20.86	20.00	6.11	4.00	46.09	8.51	10.00	9.50
3	Quaker Poultry Mash,	Quaker Oats Co.,	7.85	18.27	17.50	5.26	4.00	55.47	7.40	10.00	5.75
2	Schumacher Poultry Mash,	Quaker Oats Co.,	8.28	19.47	17.50	5.16	4.00	53.89	6.91	10.00	6.29
1	Purina Chicken Chowder,	Purina Mills,	8.16	20.05	18.00	5.14	4.00	49.66	10.05	9.00	6.94
1	Purina Chicken Fatena,	Purina Mills,	9.92	13.31	9.00	6.03	5.00	60.18	7.00	9.00	3.56
1	Growing and Forcing Feed,	G. T. Savage Poultry Supply Co.,	9.12	11.29	11.50	3.21	3.50	63.10	7.23	9.32	6.05
1	Meat Cereal,	G. T. Savage Poultry Supply Co.,	9.14	14.36	11.50	4.36	3.50	56.77	9.77	9.32	5.60
1	Spratts Utility Mash Food,	Spratts Patent Ltd.,	8.44	21.36	20.00	5.50	4.50	54.00	4.41	7.00	6.29
3	Tioga Laying Food,	Tioga Mill & Elevator Co.,	7.69	18.88	16.00	5.02	2.50	48.25	5.69	6.00	14.47
1	Tioga Dry Mash,	Tioga Mill & Elevator Co.,	8.07	12.61	12.00	4.56	2.00	54.80	5.19	6.50	14.77

Animal Products (Per Cent.).

Number of Samples.	FEEDSTUFFS.	Name of Manufacturer.	PROTEIN.		FAT.		Phosphoric Acid.	Ash.
			Found.	Guaranteed.	Found.	Guaranteed.		
	MEAT.							
3	Protox Meat Scraps,	American Agricultural Chemical Co.,	52.94	55.00	13.81	10.00	8.71	24.16
3	Special Meat Scraps,	Butchers Rendering Co.,	72.67	60.00	13.76	10.00	3.97	10.74
3	Meat Scraps,	Owen Coogan & Sons,	53.94	45.00	20.68	10.00	4.60	16.88
1	Meat Scraps,	John C. Dow Co.,	45.48	45.00	17.07	12.00	9.18	25.71
2	Steamed Meat and Bone,	N. Roy & Sons,	54.64	45.00	10.97	8.00	6.68	22.34
	MEAT AND BONE.							
1	Star,	Beach Soap Co.,	39.83	40.00	9.54	10.00	15.66	39.27
1	Animal Meal,	Bowker Fertilizer Co.,	41.20	40.00	7.16	5.00	12.34	37.95
1	Brecks,	Joseph Breck & Sons Corp.,	42.21	43.00	13.72	12.00	11.63	31.04
2	Poultry Food,	Burlington Rendering Co.,	40.67	40.00	10.95	8.00	13.54	36.63
1	Butchers Poultry Feed,	Butchers Rendering Co.,	45.75	40.00	10.54	8.00	13.78	36.23
1	Poultry Scraps,	E. A. Cowee Co.,	32.62	35.00	11.72	10.00	16.22	42.50
2	Poultry Scraps,[1]	Green Chicken Feed Co.,	25.61	40.00	4.43	3.00	22.30	57.91
9	Old Fashioned Meat Scraps,	Green Chicken Feed Co.,	23.90	–[2]	9.87	5.00	20.44	53.71
2	Scraps,	W. D. Higgins,	41.29	40.00	16.89	12.00	12.98	34.55
3	Poultry Food,	Hinckley Rendering Co.,	35.85	35.00	11.41	8.00	14.80	38.72
1	Meat and Bone Scraps,	Home Soap Co.,	37.13	40.00	16.88	12.00	13.88	35.62
1	Lowell Poultry Feed,	Lowell Fertilizer Co.,	46.19	40.00	9.06	8.98	13.36	36.87
1	Poultry Scrap,	A. G. Markham & Co.,	45.00	35.00	11.73	12.00	12.44	32.77
5	Marshs Scraps,	George E. Marsh Co.,	37.21	40.00	10.45	10.00	13.49	40.18
2	Scraps,	James F. Morse Co.,	38.10	40.00	12.04	10.00	13.50	38.23
3	Poultry Feed,	Pawtucket Rendering Co.,	46.48	40.00	11.96	8.00	12.31	31.76
1	Poultry Feed,	Portland Rendering Co.,	46.63	40.00	11.47	8.00	17.28	32.63
2	Scraps,	Ropes Bros.,	37.97	40.00	11.11	10.00	14.19	38.01
3	Peerless Poultry Feed,	Springfield Rendering Co.,	42.53	40.00	10.81	8.00	13.54	36.65
1	Digester Tankage,	Springfield Rendering Co.,	47.72	40.00	8.00	8.00	13.48	49.41
1	Poultry Scraps,	Whitman & Pratt Rendering Co.,	42.78	35.00	12.73	12.00	12.38	34.31
	BONE.							
1	Bone Meal,	American Agricultural Chemical Co.,	18.44	–	4.88	–	26.14	66.66
1	Bone Meal,	John C. Dow Co.,	12.19	12.00	10.14	5.00	25.28	68.37
1	Bone Meal,	Worcester Rendering Co.,	26.49	20.00	7.81	5.00	22.76	55.81
	FISH.							
1	Fish Scraps,	American Glue Co.,	52.30	60.00	1.63	2.00	12.76	37.69
1	B. & M. Fish Scraps,	Burnham & Morrill Co.,	46.25	55.00	2.10	1.50	12.52	42.18
5	Chic Chuk,	Russia Cement Co.,	51.67	50.00	1.76	2.00	13.11	38.39

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[1] Fish, meat, bone, lime, salt.

[2] Various guarantees, all too high, has the appearance of bone tankage.

REVIEW OF THE ANALYTICAL WORK.

To economize space and save expense, the preceding tables simply give the average analyses of samples collected and not the analyses of individual samples, as formerly. The statement of certified ingredients is also omitted. Data omitted are on file at the experiment station and will be furnished, upon application, to those interested.

Cottonseed Meal. — The greater part of the cottonseed meal sold was guaranteed to contain only 36 per cent. protein, and the average analysis of all samples collected showed less protein and fat and more fiber than for the preceding year. It is hoped that when conditions again become normal cottonseed crushers will see the wisdom of mixing fewer hulls with the meal. Formerly cottonseed meal contained 43 or more per cent. protein and about 7 per cent. fiber, while now the fiber content varies between 10 and 15 per cent., — a condition which decreases the feeding value of the meal.

Cottonseed Feed. — Twenty samples of this product were collected. Cottonseed feed is the mill-run hulls and meal ground together, or a mixture of cottonseed meal and delinted hulls (erroneously called cottonseed bran) mixed together in about the proportion of mill run, while in cottonseed meal a considerable proportion of the hulls has been removed. The addition of all of the hulls seriously decreases the feeding value of the mixture.

Linseed Oil Meal.— During the past season linseed meal sold at a price which compared favorably with cottonseed meal. Linseed meal, while containing slightly less total protein, is fully equal in feeding value to the cottonseed meal now being sold. One sample manufactured by the American Milling Company contained screenings and was so guaranteed.

Miscellaneous Oil Cakes. — *Corn germ oil cake meal* is the ground corn germ cake from which the oil has been partially extracted. A considerable difference will be noted in the analyses of the different brands, probably due to a greater admixture of the starchy part of the corn kernel in the samples containing the smaller amount of protein. The corn germ meal may be derived from either cornstarch factories or hominy mills. It has a high feeding value.

Cocoanut oil cake meal is derived from the meat of the cocoanut after partial extraction of the oil, and approximates gluten feed in feeding value. Cocoanut meal has the reputation of easily turning rancid. If it does not contain an excessive amount of water and is stored in a cool dry place, there will probably be no difficulty in keeping the product for a reasonable time.

Peanut oil cake feed is the ground cake obtained from the whole peanut (shell and kernel) after the extraction of the oil.

Peanut oil cake meal is derived from the shelled nut. The average analysis of the four samples of peanut oil cake feed collected compared with peanut oil cake meal follows: —

	Peanut Oil Cake Feed (Per Cent.).	Peanut Oil Cake Meal (Per Cent.).
Water,	7.73	10.70
Protein,	32.99	47.60
Fat,	7.54	8.00
Nitrogen free extract,	23.23	23.70
Fiber,	24.63	5.10
Ash,	3.91	4.90

Peanut oil cake meal (without shell) is highly digestible and an exceedingly valuable protein feed. Peanut oil cake feed (with shell) is considerably inferior because of the large amount of indigestible shells present.

Gluten Meal and the Gluten Feeds conformed to their guarantees and were of usual quality.

Distillers' and Brewers' Dried Grains were found in limited amounts. Owing to the fact that these products will eventually disappear from the markets, discussion as to their value is unnecessary.

Yeast Grains are the dried residues remaining from various mixtures of cereals and cereal products used as a medium for growing commercial yeast. In appearance they resemble brewers' dried grains, which they approach in feeding value.

Wheat By-Products, Middlings, Mixed Feed and Bran were, contrary to expectation, of the usual quality. Present milling regulations did not appear to affect their composition materially in so far as we have been able to judge. A considerable proportion of the wheat kernel, which was formerly sold as red dog flour and flour middlings, is now incorporated in the wheat flour. Wheat by-products of all kinds are scarce and difficult to obtain in New England, due to decreased production in proportion to the amount of wheat milled, to the fact that more bran is being consumed at points near the mills, and possibly because mixers of prepared feeds have been able to contract for large amounts of wheat bran which ordinarily enter into the market unmixed. With distillers' and brewers' dried grains out of the market and wheat bran in limited supply, feeders desiring a bulky ration must turn to ground barley, oats or alfalfa or to some of the low-grade by-products, such as oat and barley feeds. While a large number of wheat products were collected, many of them were found early in the autumn of 1917 or later in the season in smaller lots.

Wheat and Rye Mixtures. — While only seven samples of these mixtures were collected, information is available which tends to show that their sale is increasing. They are usually offered as substitutes for straight wheat by-products, and if of good quality they should prove fully as satisfactory.

Dairy Feeds (mixed rations) are feeding stuffs prepared by manufacturers from a number of ingredients, and are intended as complete grain rations for dairy stock. Most of them will prove satisfactory for the purpose, although some contain too much fiber. It is believed that such mixtures should not contain over 10 per cent. of fiber and that preference should be given to those not containing over this amount. In normal times, with a variety of feeding stuffs from which to choose, dairymen can usually mix a ration which will be more economical than the prepared products.

Molasses Feeds (containing over 15 per cent. protein), as a rule, contain one or more low-grade materials mixed with standard feeding stuffs and either cane or beet molasses. The principal low-grade materials used are as follows: —

Clipped oat by-product, which is obtained in the manufacture of clipped oats, consists of the light chaffy material broken from the ends of the hulls, empty hulls, light, immature oats and dust.

Oat feed represents the oat residue obtained from the manufacture of cereal breakfast food from oats.

Grain screenings consist of the smaller, imperfect grains, weed seeds and other foreign material separated in cleaning grain. It may or may not have considerable feeding value, depending upon the proportion of imperfect grain, chaff, and bitter, unpalatable weed seeds. It is best fed to sheep.

Humus, used by the Economic Feed Company, is, according to Webster's dictionary, "a brown or black material formed by the partial decomposition of vegetable or animal matter; the organic portion of soil." If this is what is meant, it probably has no feed value and cannot be considered as anything but an absorbent or adulterant.

Cocoa shells are the dry shells of the cocoa bean obtained from chocolate factories. While having about one-half the feeding value of corn meal, they are unpalatable and must be ground and mixed with other material before being eaten readily by animals. (See Bulletin No. 158 of this station.)

Purina Dairy Feed did not contain any of the above ingredients but consisted of grain by-products, molasses and ground alfalfa hay.

Miscellaneous Feeds. — *Velvet bean feed,* a new product for Massachusetts, consists of the ground bean and pod of the velvet bean, which grows freely in the South. With the exception of a rather higher fiber content, it resembles wheat bran in composition, but has about 15 per cent. greater feeding value. Without the addition of the pod it would be a much more valuable feed. A number of lots have been shipped in too moist a condition, which causes it to become musty and injures its feeding value.

Hog feeds intended as complete grain rations for swine are new to Massachusetts. Diamond Hog Feed is corn germ oil cake meal unmixed. It is deficient in ash and high in protein, and, while it may be used as a component of a pig ration, it is not advised as an exclusive feed. The other samples consisted of various by-products, and will probably prove satisfactory for the purpose intended.

Rye Feeds. — Due to the shortage of wheat by-products and the increased milling of rye, more rye feeds are being offered. The samples collected were of good quality and equal to the corresponding wheat feeds in feeding value.

Corn feed meal is a by-product in the manufacture of table meal and corn flour from maize by the so-called non-degerminating process. It varies greatly in appearance, depending upon the remaining proportion of the starchy part of the kernel. The product put out by the wheat millers, who are manufacturing corn flour on account of war conditions, consists largely of corn bran and corn germ. Corn feed meal has been sold as hominy feed, which it somewhat resembles in composition. Corn feed meal may be used in the place of corn meal or hominy feed, although it is not quite equal to either in food value.

Hominy feed, in accordance with a ruling of the United States Food Administration, should conform to the following definition: —

> Hominy feed, hominy meal or hominy chop shall be a kiln-dried mixture of the mill run bran coating, the mill run germ, with or without a partial extraction of the oil and a part of the starchy portion of the corn kernel obtained in the manufacture of hominy, hominy grits, and corn meal by the degerminating process from clean, sound, white corn, shall contain not to exceed 14 per cent. moisture, not to exceed 7 per cent. fiber, not less than 10 per cent. protein, not less than 5 per cent. fat, and shall have a texture fine enough to sift through No. 12 wire bolting cloth.
>
> Yellow hominy feed, yellow hominy meal or yellow hominy chop shall conform to the specifications for hominy feed, hominy meal or hominy chop in all respects except that it shall be made from clean, sound, yellow corn instead of white corn.

With the exception of one sample manufactured by the Arkadelphia Milling Company, the hominy feeds collected conformed to the above definitions. The Arkadelphia Milling Company claim that this was a hominy product made by the degerminating process, but owing to the condition of the corn used it did not meet the required standard.

Stock and Horse Feeds. — Products of this nature usually contain from 500 to 800 pounds of oat feed (cereal breakfast food residue), the balance being corn or hominy meal together with other by-products. When sold at a figure which bears a direct relation to the price of their components, they can be considered satisfactory for horse rations or as part of the dairy ration. They are often sold at an exorbitant figure when the market price of oat feed is considered. The use of such products is not advised where they contain over 10 per cent. of fiber, as many of them do.

Stock Feeds grouped according to Fiber Content.[1]

Less than 10 Per Cent.	10 to 12 Per Cent.	12 to 14 Per Cent.	Over 14 Per Cent.
Pennant.	Bufceco Chop.	Dewey's.	Acme.
Spring Garden.	Bufceco Stock.	Badger.	Charlestock.
Wirthmore.	Cloverleaf.	Mystic.	Marathon.
Quality.	Corno.	Fidelity.	Red Tag B.
Eastern.	Climax.	Park & Pollard.	Lucky Strike.
	Crosby's.	Syragold.	
	Eshelman's.		
	Red Tag A.		
	Grandin's.		
	Algrane Horse.		
	N. E. Stock.		
	Krause.		
	Domino.		
	Iowa.		
	Schumacher.		
	Victor.		
	Emergency.		
	Derby.		
	Blue Seal.		

[1] See tables for complete analyses.

Molasses Feeds (less than 15 per cent. protein). — Most of the feeds in this group contain alfalfa meal as a base, to which molasses or molasses and cereal grains and by-products have been added. The remarks about fiber made relative to stock feeds apply with equal force to molasses feeds.

Miscellaneous Starchy Feeds. — *Barley feed* is sold under various names, such as barley feed, barley screenings, barley bran and barley mixed feed. It is a mixture of barley hulls and barley middlings in varying proportions, the better grades containing the larger amounts of middlings. It is a by-product from the manufacture of barley flour. Barley feed according to grade has from 40 to 50 per cent. of the feeding value of corn meal, and best results will probably be obtained where not over 30 per cent. is used in the ration.

Oat feed is a by-product from the milling of oats, and contains oat hulls and oat middlings. It is a component of most horse and stock feeds, and until recently very little has found its way into the markets unmixed. Of late, owing to an increase in output and to the scarcity of other feeding stuffs, an increased amount has been sold. It is somewhat less digestible than barley feed, and is usually offered at retail at a price out of proportion to its feeding value or wholesale price. If sold at a reasonable price, it can be used as a roughage, or not to exceed 30 per cent. as a component of a grain ration.

Diamond Dairy Feed consisted largely of ground grain screenings.

Holstein Feed and *Blue Grass Valley Feed* were mixtures of wheat products and cob meal.

Poultry Mashes and Meals were of the usual quality. Those containing over 10 per cent. of ash usually had some inorganic substance, such as phosphate of lime or calcium carbonate, which, while probably necessary to the fowl, could be purchased where needed much cheaper than as a part of the mash mixture.

Animal Products. *Meat and Meat and Bone.* — These products are classified in accordance with the following definitions as adopted by the Association of Feed Control Officials: —

"Meat Scrap and Meat Meal are the ground residues from animal tissues, exclusive of hoof and horn. If they contain more than 10 per cent. of phosphoric acid they must be designated Meat and Bone Scrap, and Meat and Bone Meal. If they bear a name descriptive of their kind, composition or origin, they must correspond thereto.

"Digester Tankage is the residue from animal tissue, exclusive of hoof and horn, specially prepared for feeding purposes by tanking under live steam, drying under high heat, and suitable grinding. If it contains more than 10 per cent. of phosphoric acid it must be designated Digester Meat and Bone Tankage."

The Poultry Scraps put out by the Greene Chicken Feed Company, being a mixture of fish, meat, bone and lime, were decidedly inferior, as were the Old Fashioned Meat Scraps sold by the same company. Prosecutions on account of improper guarantee were entered for the sale of these goods and the manufacturer found guilty.

Fish scraps or meal, of which three varieties were found, form satisfactory feeds for poultry, provided they can be purchased at a reasonable figure.

Average Analyses and Retail Prices of Unmixed By-Products.

[September–April.]

FEEDSTUFFS.	Year.	Number of Samples.	Protein (Per Cent.).	Fat (Per Cent.).	Fiber (Per Cent.).	Price a Ton.
Cottonseed Meal,	1915	70	41.23	7.68	9.56	$33 48
Cottonseed Meal,	1916	72	39.74	7.14	10.46	38 96
Cottonseed Meal,	1917	79	38.28	6.98	11.73	46 63
Cottonseed Meal,	1918	92	37.04	6.56	12.39	58 88
Linseed Meal,	1915	22	35.35	6.48	7.86	38 70
Linseed Meal,	1916	27	33.80	6.04	8.08	43 45
Linseed Meal,	1917	35	34.28	6.65	7.88	48 52
Linseed Meal,	1918	35	34.86	6.74	7.56	59 88
Gluten Meal,	1915	10	45.85	1.34	1.10	37 30
Gluten Meal,	1916	11	45.24	1.15	1.30	37 80
Gluten Meal,	1917	10	42.66	0.98	1.79	47 50
Gluten Meal,	1918	13	43.28	1.22	2.38	70 33
Gluten Feed,	1915	22	26.50	2.73	6.25	33 71
Gluten Feed,	1916	27	26.37	2.94	6.68	32 87
Gluten Feed,	1917	34	25.42	2.49	7.45	40 84
Gluten Feed,	1918	32	26.35	2.57	6.84	61 40
Brewers' Grains,	1915	17	28.87	6.48	13.28	30 50
Brewers' Grains,	1916	21	27.98	6.88	13.43	30 44
Brewers' Grains,	1917	26	26.81	6.68	13.99	35 13
Brewers' Grains,	1918	21	27.55	6.72	13.92	52 67
Yeast and Vinegar Grains,	1916	4	20.00	7.18	17.69	26 00
Yeast and Vinegar Grains,	1917	12	19.72	6.89	17.60	34 45
Yeast and Vinegar Grains,	1918	7	19.98	6.83	16.92	52 40
Red Dog Flour,	1915	5	19.46	5.21	2.79	37 00
Red Dog Flour,	1916	10	17.23	4.55	2.57	37 30
Red Dog Flour,	1917	19	17.22	4.65	2.48	48 82
Red Dog Flour,	1918	18	17.77	4.96	3.36	66 86
Wheat Middlings,	1915	58	17.70	5.14	6.43	33 31
Wheat Middlings,	1916	73	16.36	5.42	6.55	31 06
Wheat Middlings,	1917	67	16.32	5.08	7.38	40 74
Wheat Middlings,	1918	63	16.78	5.27	7.12	52 44
Wheat Mixed Feed,	1915	110	17.29	4.87	7.51	32 38
Wheat Mixed Feed,	1916	134	16.10	4.88	7.23	30 92
Wheat Mixed Feed,	1917	100	16.06	4.79	7.43	38 48
Wheat Mixed Feed,	1918	116	16.64	5.06	7.50	52 42
Wheat Bran,	1915	72	16.33	4.67	9.64	30 33
Wheat Bran,	1916	85	15.43	4.95	9.62	28 26
Wheat Bran,	1917	72	15.20	4.81	9.87	35 73
Wheat Bran,	1918	89	15.53	4.92	9.33	45 02
Rye Feed,	1918	20	16.41	3.45	5.05	54 01
Corn Meal,	1915	31	9.28	3.47	2.06	34 81
Corn Meal,	1916	15	9.00	3.52	1.90	34 60
Corn Meal,	1917	14	9.32	3.45	2.21	45 71
Corn Meal,	1918	26	9.31	3.56	1.96	83 00
Hominy Feed,	1915	67	11.16	7.55	4.39	33 19
Hominy Feed,	1916	73	11.14	7.20	4.33	34 16
Hominy Feed,	1917	72	11.17	6.55	4.61	44 48
Hominy Feed,	1918	62	11.15	6.85	4.44	68 96
Dried Beet Pulp,	1918	8	9.83	0.78	18.12	49 43
Oat Feed,	1918	11	6.25	2.74	24.81	35 00

GRAIN RATIONS FOR DAIRY STOCK.

BY J. B. LINDSEY.

The station continues to receive inquiries relative to the most suitable grain combinations, especially for dairy animals. Such inquiries are often difficult to answer because of the uncertain conditions primarily relative to the feed supply and varying cost. The wheat products are in short supply, while barley and oat residues are more frequently available. The latter materials may constitute 20 to 30 per cent. of the ration, provided their maximum cost is not over 50 per cent. of the cost of corn, hominy or corn feed meals. Rye feed may also be used in place of wheat feed, particularly for cows and pigs.

Suggested Combinations.

I.

	Pounds.
Barley or oat feed,	20
Cocoanut meal or velvet bean feed,	60
Cottonseed or linseed meal,	20

II.

Barley or oat feed,	20
Cocoanut meal or gluten feed,	50
Velvet bean feed,	30

III.

Barley or oat feed,	30
Rye feed,	20
Corn, corn feed or hominy meal,	20
Soy bean meal or high-grade peanut meal,	30

IV.

Wheat bran or rye feed,	30
Corn, corn feed or hominy meal,	40
Soy bean meal, or high-grade peanut meal, or cottonseed or linseed meals,	30

V.

	Pounds.
Wheat bran or rye feed,	20
Gluten feed,	50
Corn, corn feed or hominy meal,	30

VI.

Barley or oat feed,	30
Gluten feed or cocoanut meal,	60
Cottonseed, linseed, soy bean or high-grade peanut meal,	10

VII.

Wheat bran or rye feed,	30
Homcoline or corn germ meal,	40
Cocoanut or velvet bean meal or gluten feed,	30

VIII.

Barley or oat feed,	30
Corn, corn feed or hominy meals,	40
Cottonseed or linseed meals,	30

We do not advise the use of the peanut meal mixed with shells, which contains nearly 24 per cent. of indigestible fiber, even though it has about 33 per cent. protein, whenever other protein concentrates are available, and we have refrained from incorporating it into the above rations.

The amount of grain to be fed depends upon the size and condition of the cow and the milk yield. Usually 1 pound of grain for each 3 pounds of milk is a good rule to follow. The judgment of the observing feeder should always accompany the best of rules.

A Ration for Pigs. — A mixture, by weight, of one-third rye feed, one-third velvet bean meal or cocoanut meal and one-third corn meal, corn feed meal or hominy meal, is suggested. In the winter season when green feed is not available, refuse vegetables, boiled small potatoes or even a little cut alfalfa or silage should prove helpful supplements.

Note. — For a discussion of the grain problem and the relative values of feeds see Control Bulletin No. 7, pages 24–28, to be had on application.

Market Prices of Commercial Feedstuffs for 1917–18.

FEEDSTUFFS.	AVERAGE MONTHLY WHOLESALE TON PRICES, 1917–18.												Average.
	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	
Cottonseed Meal,	$51 63	$53 90	$55 80	-	-	$55 00	-	-	-	-	-	-	$54 08
Linseed Meal (N. P. & O. P.),	52 63	54 50	55 06	$57 75	$59 00	58 00	-	-	-	-	-	-	56 16
Gluten Feed (sacked),	53 38	54 18	54 85	58 75	58 00	-	-	-	-	$51 29	$53 93	$56 17	55 07
Gluten Feed (bulk),	51 84	50 65	51 75	54 68	54 25	54 25	$54 38	$57 29	$49 79	46 45	48 02	50 92	52 02
Flour Middlings (Red Dog),	60 88	62 00	62 25	62 38	-	-	-	-	-	-	-	-	61 88
Standard Middlings,	41 59	45 25	46 17	49 35	-	47 50	-	-	-	-	-	-	45 97
Mixed Feed,	42 37	43 42	46 19	50 44	-	52 00	-	-	-	-	-	-	46 88
Bran, Spring,	35 59	36 50	39 81	46 31	46 00	47 50	-	-	-	-	-	-	41 95
Bran, Winter,	36 19	36 75	40 31	46 75	-	-	-	-	-	-	-	-	40 00
Hominy Feed (sacked),	61 40	59 80	61 20	59 00	-	-	-	-	-	50 82	63 03	65 55	60 11
Hominy Meal (bulk),	57 90	56 98	-	-	-	64 40	66 73	54 90	46 98	46 07	56 90	60 90	56 86
Corn Meal,	84 00	82 20	87 40	86 40	76 60	74 20	77 80	70 40	65 80	64 60	69 60	71 40	75 87
Corn, No. 2, Yellow,	81 42	76 78	86 78	-	-	-	74 63	69 99	67 13	66 06	68 31	71 42	73 61
Oats, No. 2, Clipped,	47 50	43 13	47 50	53 75	-	-	-	-	-	-	-	-	47 97
Feed Barley (standard),	62 09	60 84	59 17	65 42	68 34	83 76	90 84	82 09	68 76	60 84	58 33	50 83	67 62
Hay, No. 1 (large bales),	22 12	23 45	25 75	26 88	28 30	29 63	30 38	27 67	27 98	28 38	28 50	29 67	27 39
Hay, No. 2 (large bales),	19 13	21 20	23 19	23 69	24 30	25 19	25 12	21 94	21 73	20 75	22 50	25 13	22 82
Hay, No. 1, Clover Mixed,	15 50	18 20	20 13	20 25	21 40	22 38	22 44	20 50	19 73	19 00	19 38	20 25	19 93
Straw, Choice Rye,	15 50	15 83	16 28	16 48	17 80	19 88	22 88	22 21	20 40	19 00	18 50	18 75	18 63
Straw, Oat,	9 88	10 95	-	12 69	13 40	13 76	-	-	-	-	10 50	11 38	11 79